



GF83-B7074

Service Engineer's Manual



PREFACE

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Notice for the USA

Compliance Information Statement (Declaration of Conformity Procedure) DoC FCC Part 15: This device complies with part 15 of the FCC Rules

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

- This device must not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesirable operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice for Canada

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.



Notice for Europe (CE Mark)

This product is in conformity with the Council Directive 2004/108/EC.

CAUTION: Lithium battery included with this board. Do not puncture, mutilate, or dispose of battery in fire. There will be danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by manufacturer. Dispose of used battery according to manufacturer instructions and in accordance with your local regulations.

About this Manual

This manual is intended for trained service technicians and personnel with hardware knowledge of personal computers. It is aimed to provide you with instructions on installing your TYAN GF83-B7074.

How this guide is organized

This guide contains the following parts:

Chapter 1: Overview

This chapter provides an introduction to the TYAN GF83-B7074 barebones and standard parts list, describes the external components, gives an overview of the product from different angles.

Chapter 2: Setting Up

This chapter covers procedures on installing the processors, memory modules, hard drivers and other optional parts.

Chapter 3: Replacing the Pre-installed Components

This chapter covers the removal and replacement procedures for pre-installed components.

Chapter 4: Motherboard Information

This chapter lists the hardware setup procedures that you need to abide by when installing system components. It includes description of the jumpers and connectors on the motherboard.

Chapter 5: BIOS Setup

This chapter tells how to change system settings through the BIOS setup menu. Detailed descriptions of the BIOS parameters are also provided.

Chapter 6: Diagnostics

This chapter introduces some BIOS codes and technical terms to provide better service for the customers.

Appendix:

This chapter provides the cable connection table, the FRU parts list for reference of system setup, and technical support in case a problem arises with your system.

Safety and Compliance Information

Before installing and using TYAN GF83-B7074, take note of the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Do not block the slots and opening on the unit, which are provided for ventilation.
- Only use the power source indicated on the marking label. If you are not sure, contact the power company.
- The unit uses a three-wire ground cable, which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace your obsolete outlet.
- Do not place anything on the power cord. Place the power cord where it will not be in the way of foot traffic.
- Follow all warnings and cautions in this manual and on the unit case.
- Do not push objects in the ventilation slots as they may touch high voltage components and result in shock and damage to the components.
- When replacing parts, ensure that you use parts specified by the manufacturer.
- When service or repairs have been done, perform routine safety checks to verify that the system is operating correctly.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- Cover the unit when not in use.

Safety Information

Retain and follow all product safety and operating instructions provided with your equipment. In the event of a conflict between the instructions in this guide and the instructions in equipment documentation, follow the guidelines in the equipment documentation.

Observe all warnings on the product and in the operating instructions. To reduce the risk of bodily injury, electric shock, fire and damage to the equipment, observe all precautions included in this guide.

You must become familiar with the safety information in this guide before you install, operate, or service TYAN products.

Symbols on Equipment

	Caution. This symbol indicates a potential hazard. The potential for injury exists if cautions are not observed. Consult equipment documentation for specific details.
	Caution. Slide-mounted equipment is not to be used as a shelf or a work space.
	Warning. This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
	Warning. This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce risk of injury from a hot component, allow the surface to cool before touching.
	Warning. This symbol indicates hazardous moving parts. Keep away from moving fan blades.

General Precautions

- Follow all caution and warning instructions marked on the equipment and explained in the accompanying equipment documentation.

Machine Room Environment

- This device is for use only in a machine room or IT room.

- Make sure that the area in which you install the system is properly ventilated and climate-controlled.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the electrical rating label of the equipment.
- Do not install the system in or near a plenum, air duct, radiator, or heat register.
- Never use the product in a wet location.

Equipment Chassis

- Do not block or cover the openings to the system.
- Never push objects of any kind through openings in the equipment. Dangerous voltages might be present.
- Conductive foreign objects can produce a short circuit and cause fire, electric shock, or damage to your equipment.
- Lift equipment using both hands and with your knees bent.

Equipment Racks

To avoid injury or damage to the equipment:

- Observe local occupational health and safety requirements and guidelines for manual materials handling.
- Do not attempt to move a rack by yourself; a minimum of two people are needed to move a rack.
- Do not attempt to move a fully loaded rack. Remove equipment from the rack before moving it.
- Do not attempt to move a rack on an incline that is greater than 10 degrees from the horizontal.
- Make sure the rack is properly secured to the floor or ceiling.
- Make sure the stabilizing feet are attached to the rack if it is a single-rack installation.
- Make sure racks are coupled together if it is a multiple-rack installation.
- Make sure the rack is level and stable before installing an appliance in the rack.

- Make sure the leveling jacks are extended to the floor.
- Make sure the full weight of the rack rests on the leveling jacks.
- Always load the rack from the bottom up. Load the heaviest component in the rack first.
- Make sure the rack is level and stable before pulling a component out of the rack.
- Make sure only one component is extended at a time. A rack might become unstable if more than one component is extended.

To avoid damage to the equipment:

- The rack width and depth must allow for proper serviceability and cable management.
- Ensure that there is adequate airflow in the rack. Improper installation or restricted airflow can damage the equipment.
- The rack cannot have solid or restricted airflow doors. You must use a mesh door on the front and back of the rack or remove the doors to ensure adequate air flow to the system.
- If you install the Model in a rack, do not place equipment on top of the unit. It will cause restricted airflow and might cause damage to the equipment.
- Make sure the product is properly matted with the rails. Products that are improperly matted with the rails might be unstable.
- Verify that the AC power supply branch circuit that provides power to the rack is not overloaded. This will reduce the risk of personal injury, fire, or damage to the equipment. The total rack load should not exceed 80 percent of the branch circuit rating. Consult the electrical authority having jurisdiction over your facility wiring and installation requirements.

Equipment Power Cords

- Use only the power cords and power supply units provided with your system. The system might have one or more power cords.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- In all European electrical environments, you must ground the Green/Yellow tab on the power cord. If you do not ground the Green/Yellow tab, it can cause an electrical shock due to high leakage currents.

- Do not place objects on AC power cords or cables. Arrange them so that no one might accidentally step on or trip over them.
- Do not pull on a cord or cable. When unplugging from the electrical outlet, grasp the cord by the plug.
- To reduce the risk of electrical shock, disconnect all power cords before servicing the appliance.



Equipment Batteries

- The system battery contains lithium manganese dioxide. If the battery pack is not handled properly, there is risk of fire and burns.
- Do not disassemble, crush, puncture, short external contacts, or dispose of the battery in fire or water.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- The system battery is not replaceable. If the battery is replaced by an incorrect type, there is danger of explosion. Replace the battery only with a spare designated for your product.
- Do not attempt to recharge the battery.
- Dispose of used batteries according to the instructions of the manufacturer. Do not dispose of batteries with the general household waste. To forward them to recycling or proper disposal, use the public collection system or return them to TYAN, your authorized TYAN partner, or their agents.

Equipment Modifications

- Do not make mechanical modifications to the system. TYAN is not responsible for the regulatory compliance of TYAN equipment that has been modified.

Equipment Repairs and Servicing

- The installation of internal options and routine maintenance and service of this product should be performed by trained service technicians/personnel who are knowledgeable about the procedures, precautions, and hazards associated with equipment containing hazardous energy levels.
- Do not exceed the level of repair specified in the procedures in the product

documentation. Improper repairs can create a safety hazard.

- Allow the product to cool before removing covers and touching internal components.
- Remove all watches, rings, or loose jewelry when working before removing covers and touching internal components.
- Do not use conductive tools that could bridge live parts.
- Use gloves when you remove or replace system components; they can become hot to the touch.
- If the product sustains damage requiring service, disconnect the product from the AC electrical outlet and refer servicing to an authorized service provider. Examples of damage requiring service include:
 - The power cord, extension cord, or plug has been damaged.
 - Liquid has been spilled on the product or an object has fallen into the product.
 - The product has been exposed to rain or water.
 - The product has been dropped or damaged.
 - The product does not operate normally when you follow the operating instructions.

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Chapter 1: Overview

1.1 About the TYAN GF83-B7074

Congratulations on your purchase of the TYAN[®] GF83-B7074, a highly optimized rack-mountable barebone system. The GF83-B7074 is designed to support [dual Intel[®] Xeon E5-2600 v3 series](#) processors and up to [512GB RDIMM / 1024GB LRDIMM / 2048GB LRDIMM 3DS](#) memory, providing a rich feature set and incredible performance. Leveraging advanced technology from [Intel[®]](#), the GF83-B7074 server system is capable of offering scalable 32 and 64-bit computing, high bandwidth memory design, and lightning-fast PCI-E bus implementation. The GF83-B7074 not only empowers your company in nowadays IT demand but also offers a smooth path for future application usage.

TYAN[®] also offers the GF83-B7074 in a version that can support up to [eight SAS 6Gb/s and ten SATA 6Gb/s](#) fixed hard drives. The GF83-B7074 uses TYAN's latest chassis featuring a robust structure and a solid mechanical enclosure. All of this provides GF83-B7074 the power and flexibility to meet the needs of nowadays server application.



1.2 Product Models

The system board within the Tyan Barebone is defined by the following model:

- **B7074G83V8**: Intel-based platform
- **B7074G83E8V2**: Intel-based platform
- **B7074G83W18**: Intel-based platform

1.3 Features

TYAN GF83B7074 (B7074G83V8)

System	Form Factor	1U Rackmount
	Gross Weight	16 kg
	Chassis Model	GF83
	Dimension (D x W x H)	32.6" x 17.17" x 1.72" (830 x 436 x 43.6mm)
	Motherboard	S7074GM2NR-B
	Board Dimension	EATX, 12"x14" (304.8x355.6mm)
Internal Drive Bay	Type / Q'ty	3.5" fixed / (8)
	Supported HDD Interface	SATA-III 6.0Gb/s
System Cooling Configuration	FAN	(6) 4cm fans
Power Supply	Type	EPS1U
	Efficiency	80 plus Platinum
	Input Range	200-240V/4.3A
	Frequency	50-60 Hertz
	Output Watts	650 Watts
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3 series processors
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 145W
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C612
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 2133/1866/1600 / LRDIMM DDR4 2133/1600 / LRDIMM 3DS DDR4 2133/1600
	Capacity	Up to 512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB LRDIMM 3DS *Follow latest Intel DDR4 Memory POR
	Memory channel	4 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	PCI-E	(1) PCI-E Gen3 x16 slots / (1) PCI-E Gen3 x8 slot
	Note:	(1) PCI-E Gen3 x8 Mezz. slot/ (1) PCI-E Gen3 x8 OCP slot
	Pre-install TYAN Riser Card	M2091, PCI-E x16 1U riser card (left)
LAN	Port Q'ty	(2) GbE ports / (1) PHY
	Controller	Intel I350-AM2
	PHY	Realtek RTL8201EL
Storage	sSATA Connector	(1) Mini-SAS (4-ports)

	Controller	Intel C612
	Speed	6.0 Gb/s
	RAID	RAID 0/1/10/5 (Intel RST) only for 4 SATA devices
	Connector	(1) Mini-SAS (4-ports) + (2) SATA (totally support 6 ports)
	SATA Controller	Intel C612
	Speed	6.0 Gb/s
	RAID	RAID 0/1/10/5 (Intel RST)
	Connector type	D-Sub 15-pin
	Resolution	Up to 1920x1200
Graphic	Chipset	Aspeed AST2300
I/O Ports	USB	(2) USB3.0 ports (2 at front)
	COM	(1) DB-9 COM port
	VGA	(1) D-Sub 15-pin port
	RJ-45	(2) GbE, (1) PHY dedicated for IPMI
	Button	(1) Rest/ (1) Power/ (1) ID
	Others	(1) Power LED/ (1) HDD LED/ (1) ID LED
	Chipset	Aspeed AST2300
System Monitoring	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Temperature	Monitors temperature for CPU & memory & system environment
	Others	Watchdog timer support
	Onboard Chipset	Onboard Aspeed AST2300
Server Management	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub / BIOS update
	AST2300 iKVM Feature	24-bit high quality video compression / 10/100 Mb/s MAC interface
	Brand / ROM size	AMI / 16MB
BIOS	Feature	User-configurable H/W monitoring / SMBIOS 2.7/PnP/Wake on LAN / ACPI 3.0/ACPI sleeping states S4,S5
Operating System	OS supported list	Please refer to our Intel OS supported list.
Regulation	FCC (DoC)	Class A
	CE (DoC)	Yes
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Compliant	Yes

Package Contains	Barebone	(1) GF83-B7074 Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD

TYAN GF83B7074 (B7074G83E8V2)

System	Form Factor	1U Rackmount
	Gross Weight	16 kg
	Chassis Model	GF83
	Dimension (D x W x H)	32.6" x 17.17" x 1.72" (830 x 436 x 43.6mm)
	Motherboard	S7074GM2NRE-B
	Board Dimension	EATX, 12"x14" (304.8x355.6mm)
Internal Drive Bay	Type / Q'ty	2.5" fixed NVMe SSD + 2.5" fixed HDD / (8)+(2)
	Supported HDD Interface	(8) NVMe (PCI-E Gen3 x4) + (2) SATA 6Gb/s
System Cooling Configuration	FAN	(6) 4cm fans
Power Supply	Type	EPS1U
	Efficiency	80 plus Platinum
	Input Range	200-240V/5.3A
	Frequency	50-60 Hertz
	Output Watts	800 Watts
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3 series processors
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 145W
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C612
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 2133/1866/1600 / LRDIMM DDR4 2133/1600 / LRDIMM 3DS DDR4 2133/1600
	Capacity	Up to 512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB LRDIMM 3DS *Follow latest Intel DDR4 Memory POR
	Memory channel	4 Channels per CPU
	Memory voltage	1.2V
Expansion Slots	PCI-E	(1) PCI-E Gen3 x16 slots / (1) PCI-E Gen3 x8 slot
	Note:	(1) PCI-E Gen3 x8 Mezz. slot/ (1) PCI-E Gen3 x8 OCP slot
	Pre-install TYAN Riser Card	M2091, PCI-E x16 1U riser card (left)
LAN	Port Q'ty	(2) GbE ports + (1) dedicated for IPMI

Storage	Controller	Intel I350-AM2
	PHY	Realtek RTL8201EL
	NVMe	(8) Internal mini-SAS HD connectors (SFF-8643)
	Connector	(1) Mini-SAS (4-ports)
	sSATA	
	Controller	Intel C612
	Speed	6.0 Gb/s
	RAID	RAID 0/1/10/5 (Intel RST) only for 4 SATA devices
	SATA	
	Connector	(1) Mini-SAS (4-ports) + (2) SATA (totally support 6 ports)
Graphic	Controller	Intel C612
	Speed	6.0 Gb/s
	RAID	RAID 0/1/10/5 (Intel RST)
I/O Ports	Connector type	D-Sub 15-pin
	Resolution	Up to 1920x1200
	Chipset	Aspeed AST2300
	USB	(2) USB3.0 ports (2 at front)
	COM	(1) DB-9 COM port
	VGA	(1) D-Sub 15-pin port
	RJ-45	(2) GbE, (1) PHY dedicated for IPMI
System Monitoring	Button	(1) Rest/ (1) Power/ (1) ID
	Others	(1) Power LED/ (1) HDD LED/ (1) ID LED/ (2) External mini-SAS HD connectors (SFF-8644)
	Chipset	Aspeed AST2300
	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Temperature	Monitors temperature for CPU & memory & system environment
Server Management	Others	Watchdog timer support
	Onboard Chipset	Onboard Aspeed AST2300
	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub / BIOS update
	AST2300 iKVM Feature	24-bit high quality video compression / 10/100 Mb/s MAC interface
BIOS	Brand / ROM size	AMI / 16MB
	Feature	User-configurable H/W monitoring / SMBIOS 2.7/PnP/Wake on LAN / ACPI 3.0/ACPI sleeping states S4,S5
Operating System	OS supported list	Please refer to our Intel OS supported list.
Regulation	FCC (DoC)	Class A
	CE (DoC)	Yes
Operating	Operating Temp.	10° C ~ 35° C (50° F~ 95° F)

Environment	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Compliant	Yes
Package Contains	Barebone	(1) GF83-B7074 Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD

TYAN GF83B7074 (B7074G83W18)

System	Form Factor	1U Rackmount
	Gross Weight	16 kg
	Chassis Model	GF83
	Dimension (D x W x H)	32.6" x 17.17" x 1.72" (830 x 436 x 43.6mm)
	Motherboard	S7074GM2NR-B
	Board Dimension	EATX, 12"x14" (304.8x355.6mm)
Internal Drive Bay	Type / Q'ty	2.5" fixed / (18)
	Supported HDD Interface	(8) SAS 6Gb/s + (10) SATA 6Gb/s
	Pre-install TYAN SAS Mezz Card	M7094-2308-8I LSI SAS Mezz Card
System Cooling Configuration	FAN	(6) 4cm fans
Power Supply	Type	EPS1U
	Efficiency	80 plus Platinum
	Input Range	200-240V/4.3A
	Frequency	50-60 Hertz
	Output Watts	650 Watts
Processor	Supported CPU Series	Intel Xeon Processor E5-2600 v3 series processors
	Socket Type / Q'ty	LGA2011 / (2)
	Thermal Design Power (TDP) wattage	Max up to 145W
	System Bus	Up to 9.6/ 8.0/ 6.4 GT/s with Intel QuickPath Interconnect (QPI) support
Chipset	PCH	Intel C612
Memory	Supported DIMM Qty	(8)+(8) DIMM slots
	DIMM Type / Speed	RDIMM DDR4 2133/1866/1600 / LRDIMM DDR4 2133/1600 / LRDIMM 3DS DDR4 2133/1600
	Capacity	Up to 512GB RDIMM/ 1,024GB LRDIMM/ 2,048GB LRDIMM 3DS *Follow latest Intel DDR4 Memory POR
	Memory channel	4 Channels per CPU
	Memory voltage	1.2V

Expansion Slots	PCI-E	(1) PCI-E Gen3 x16 slots / (1) PCI-E Gen3 x8 slot
	Note:	(1) PCI-E Gen3 x8 Mezz. slot/ (1) PCI-E Gen3 x8 OCP slot
	Pre-install TYAN Riser Card	M2091, PCI-E x16 1U riser card (left)
LAN	Port Q'ty	(2) GbE ports + (1) dedicated for IPMI
	Controller	Intel I350-AM2
	PHY	Realtek RTL8201EL
Storage	Connector	(1) Mini-SAS (4-ports)
	Controller	Intel C612
	sSATA Speed	6.0 Gb/s
	RAID	RAID 0/1/10/5 (Intel RST) only for 4 SATA devices
	Pre-install TYAN SAS Mezz Card	M7094-2308-8I LSI SAS Mezz Card
	SAS	Connector (2) Mini-SAS connectors (totally support 8 ports)
		Controller LSI SAS2308
		Speed 6.0 Gb/s
	RAID	RAID 0/1/1E/10 (LSI Integrated RAID)
	SATA	Connector (1) Mini-SAS (4-ports) + (2) SATA (totally support 6 ports)
		Controller Intel C612
		Speed 6.0 Gb/s
		RAID RAID 0/1/10/5 (Intel RST)
Graphic	Connector type	D-Sub 15-pin
	Resolution	Up to 1920x1200
	Chipset	Aspeed AST2300
I/O Ports	USB	(2) USB3.0 ports (2 at front)
	COM	(1) DB-9 COM port
	VGA	(1) D-Sub 15-pin port
	RJ-45	(2) GbE, (1) PHY dedicated for IPMI
	Button	(1) Rest/ (1) Power/ (1) ID
	Others	(1) Power LED/ (1) HDD LED/ (1) ID LED
	Chipset	Aspeed AST2300
System Monitoring	Voltage	Monitors voltage for CPU, memory, chipset & power supply
	Temperature	Monitors temperature for CPU & memory & system environment
	Others	Watchdog timer support
	Onboard Chipset	Onboard Aspeed AST2300
Server Management	AST2300 IPMI Feature	IPMI 2.0 compliant baseboard management controller (BMC) / Supports storage over IP and remote platform-flash / USB 2.0 virtual hub /

BIOS		BIOS update
	AST2300 iKVM Feature	24-bit high quality video compression / 10/100 Mb/s MAC interface
	Brand / ROM size	AMI / 16MB
	Feature	User-configurable H/W monitoring / SMBIOS 2.7/PnP/Wake on LAN / ACPI 3.0/ACPI sleeping states S4,S5
Operating System	OS supported list	Please refer to our Intel OS supported list.
Regulation	FCC (DoC)	Class A
	CE (DoC)	Yes
Operating Environment	Operating Temp.	10° C ~ 35° C (50° F ~ 95° F)
	Non-operating Temp.	- 40° C ~ 70° C (-40° F ~ 158° F)
	In/Non-operating Humidity	90%, non-condensing at 35° C
RoHS	RoHS 6/6 Compliant	Yes
Package Contains	Barebone	(1) GF83-B7074 Barebone
	Manual	(1) Web User's manual / (1) Quick Installation Guide
	Installation CD	(1) TYAN installation CD
	Others	(1) M7094-2308-8I LSI SAS Mezz Card

1.4 Standard Parts List

This section describes GF83-B7074 package contents and accessories. Open the box carefully and ensure that all components are present and undamaged. The product should arrive packaged as illustrated below.

1.4.1 Box Contents and Accessories

If any items are missing or appear damaged, contact your retailer or browse to TYAN's website for service: <http://www.tyan.com>

GF83-B7074 Box Content

B7074G83V8

1. 1U barebone, (8) 3.5" fix internal HDD bays
2. (1) 650W power supply unit
3. (2) M2091 1U RISER BD (pre-installed)
4. (1) S7074GM2NR-B system board (pre-installed)
5. (6) system fans
6. (1) M7062-B811-1T (optional)

B7074G83W18

1. 1U barebone, (18) 2.5" fix internal HDD bays
2. (1) 650W power supply unit
3. (2) M2091 1U RISER BD (pre-installed)
4. (1) S7074GM2NR-B system board (pre-installed)
5. (6) system fans
6. (1) M7062-B811-1T (optional)
7. (1) M7094-2308-8I LSI SAS Mezz Card (pre-installed)

B7074G83E8V2

1. 1U barebone, (2) 2.5" + (8) 2.5" NVMe SSD fixed Internal HDD bays
2. (1) 800W power supply unit
3. (2) M2091 1U RISER BD (pre-installed)
4. (1) S7074GM2NRE-B system board (pre-installed)
5. (6) system fans
6. (1) M7062-B811-1T (optional)

GF83-B7074 Accessories

B7074G83V8

1. Quick Installation Guide *1
2. AC Power code (US) *1
3. AC Power code (EU) *1
4. Driver CD*1
5. Screw Pack *2
6. Rubber pack*1

B7074G83W18

1. Quick Installation Guide *1
2. AC Power code (US) *1
3. AC Power code (EU) *1
4. Driver CD *1
5. Screw Pack *1

B7074G83E8V2

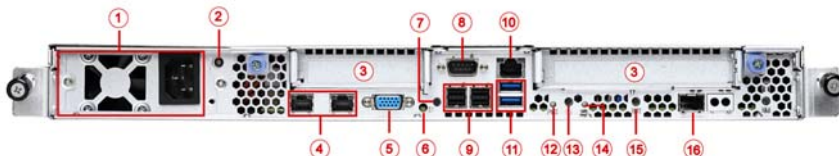
1. Quick Installation Guide *1
2. AC Power code (US) *1
3. AC Power code (EU) *1
4. Driver CD *1
5. Screw Pack *1

1.5 About the Product

The following views show you the product.

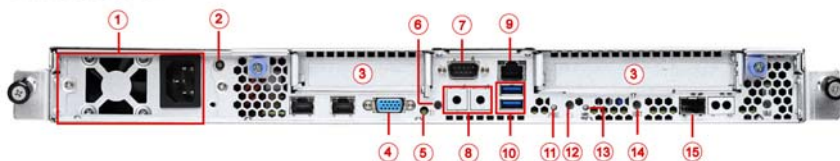
1.5.1 System Front View

B7074G83E8V2



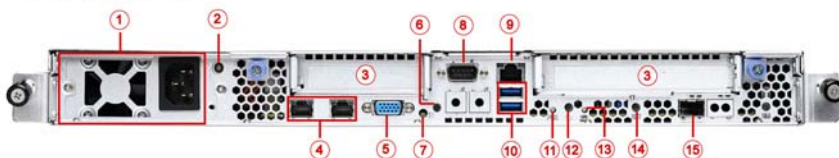
1	Power Inlet
2	Power Supply LED (green)
3	Expansion Slots
4	RJ45 LAN Ports
5	VGA Port
6	ID LED (blue)
7	ID Button
8	COM Port
9	External Mini-SAS HD Connectors
10	RJ45 (dedicated for BMC) LAN Port
11	USB3.0 Ports
12	Power LED (green)
13	Power Button
14	HDD LED (green)
15	Reset Button
16	SPF+ Connector (optional)

B7074G83V8



1	Power Inlet
2	Power Supply LED (green)
3	Expansion Slots
4	RJ45 LAN Ports
5	VGA Port
6	ID LED (blue)
7	ID Button
8	COM Port
9	RJ45 (dedicated for BMC) LAN Port
10	USB3.0 Ports
11	Power LED (green)
12	Power Button
13	HDD LED (green)
14	Reset Button
15	SPF+ Connector (optional)

GF83-B7074W18



1	Power Inlet
2	Power Supply LED (green)
3	Expansion Slots
4	RJ45 LAN Ports
5	VGA Port
6	ID LED (blue)
7	ID Button
8	COM Port
9	RJ45 (dedicated for BMC) LAN Port
10	USB3.0 Ports
11	Power LED (green)
12	Power Button
13	HDD LED (green)
14	Reset Button
15	SPF+ Connector (optional)

Front Panel LED Indication

Field	Color	Behavior
Power	Green	PS-ON / Solid On PS-Off / Off
LAN	Green/Amber	Please refer to (Fig. 1)
HDD LED	Green	Access / Blinking Idle / Off
ID LED	Blue	Located / Solid On Release / Off

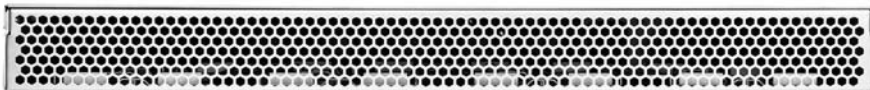
Fig. 1 LAN LED Indication

	Status	Left LED	Right LED
NO Link		Off	Off
10 Mbps	Link	Green Solid On	Off
	Active	Green Blinking	Off
100 Mbps	Link	Green Solid On	Green Solid On
	Active	Green Blinking	Green Solid On
1 Gbps	Link	Green Solid On	Amber Solid On
	Active	Green Blinking	Amber Solid On

Power Supply LED Indication

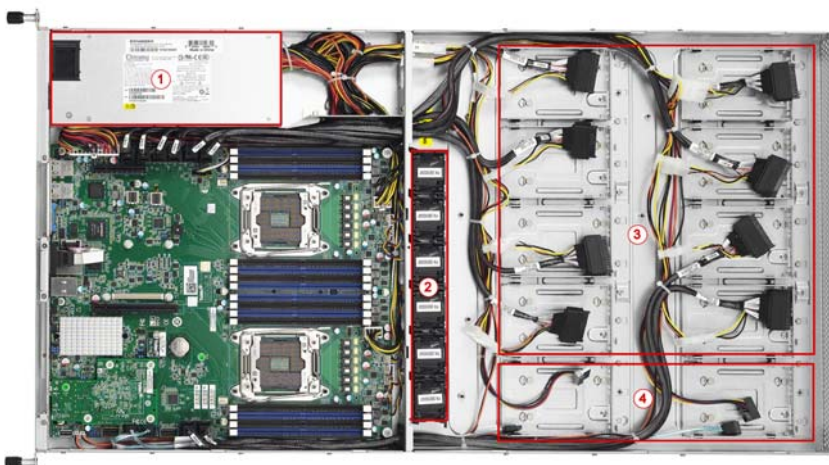
Power Supply Condition	LED Status
No AC power to power supply	OFF
Power supply critical event causing a shutdown; failure, OCP, OVP, Fan Fail	6.7Hz Blinking green
AC present / Only 5VSB on (PS off)	1Hz Blinking green
Output ON and OK	Green Solid on

1.5.2 System Rear View



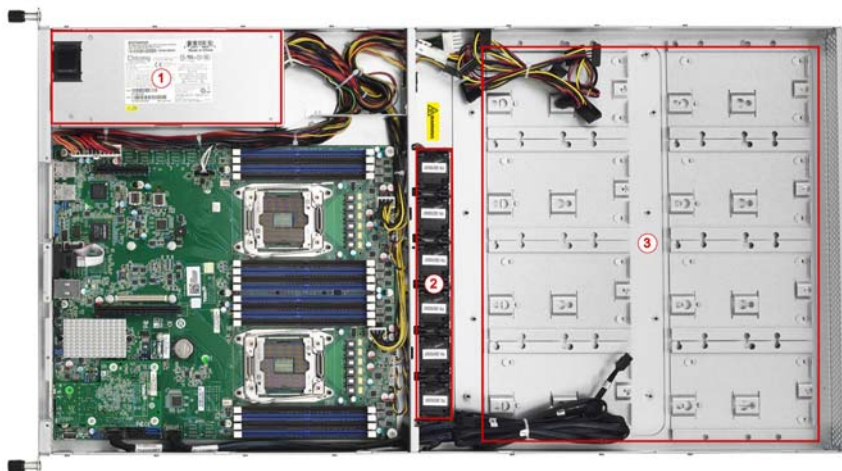
1.5.3 Top View

B7074G83E8V2



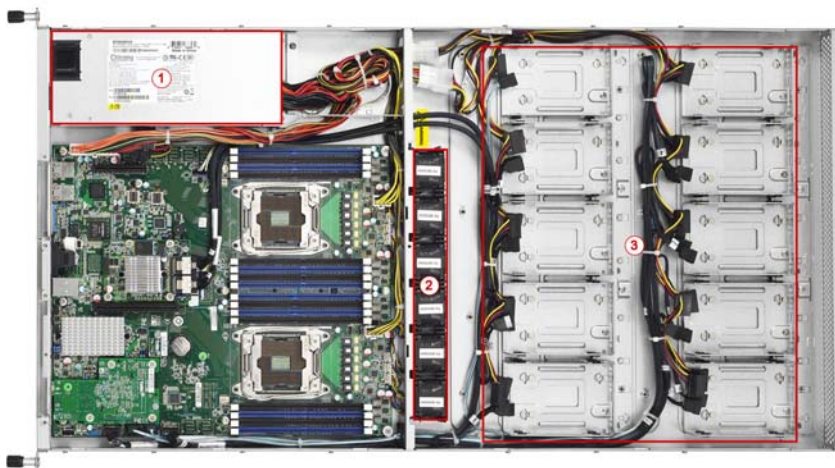
1	(1) Power Supply
2	(6) System Fans
3	(8) 2.5" fixed SSDs
4	(2) 2.5" fixed SATA HDDs

B7074G83V8



1	(1) Power Supply
2	(6) System Fans
3	(8) 3.5" fixed SATA HDDs

B7074G83W18



1	(1) Power Supply
2	(6) System Fans
3	(18) 2.5" fixed SATA HDDs

1.5.4 HDD Sequence

B7074G83E8V2: (2) 2.5" SATA HDD + (8) SATA over PCIe SSD SKU

SATA #1	SSD #4	SSD #5	SSD #6	SSD #7
---------	--------	--------	--------	--------

SATA #0	SSD #0	SSD #1	SSD #2	SSD #3
---------	--------	--------	--------	--------



Rear & Top View

B7074G83V8: (8) 3.5" SATA HDD SKU

HDD #4	HDD #5	HDD #6	HDD #7
--------	--------	--------	--------

HDD #0	HDD #1	HDD #2	HDD #3
--------	--------	--------	--------



Rear & Top View

B7074G83W18: (18) 2.5" SATA HDD SKU

Top	SATA #12	SATA #13	SATA #14	SATA #15	
Bottom	SATA #8	SATA #9	SATA #10	SATA #11	SATA #17

Top	SATA #4	SATA #5	SATA #6	SATA #7	
Bottom	SATA #0	SATA #1	SATA #2	SATA #3	SATA #16



Rear & Top View

Chapter 2: Setting Up

2.0.1 Before you Begin

This chapter explains how to install the CPUs, CPU heatsinks, memory modules, and hard drives. Instructions on inserting add on cards are also given.

2.0.2 Work Area

Make sure you have a stable, clean working environment. Dust and dirt can get into components and cause malfunctions. Use containers to keep small components separated. Putting all small components in separate containers prevents them from becoming lost. Adequate lighting and proper tools can prevent you from accidentally damaging the internal components.

2.0.3 Tools

The following procedures require only a few tools, including the following:

- A cross head (Phillips) screwdriver
- A grounding strap or an anti-static pad

Most of the electrical and mechanical connections can be disconnected with your hands. It is recommended that you do not use pliers to remove connectors as it may damage the soft metal or plastic parts of the connectors.

2.0.4 Precautions

Components and electronic circuit boards can be damaged by discharges of static electricity. Working on a system that is connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to GF83-B7074 or injury to yourself.

- Ground yourself properly before removing the top cover of the system. Unplug the power from the power supply and then touch a safely grounded object to release static charge (i.e. power supply case). If available, wear a grounded wrist strap. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Avoid touching motherboard components, IC chips, connectors, memory modules, and leads.
- The motherboard is pre-installed in the system. When removing the motherboard, always place it on a grounded anti-static surface until you are ready to reinstall it.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress circuit boards.
- Leave all components inside the static-proof packaging that they ship with until they are ready for installation.
- After replacing optional devices, make sure all screws, springs, or other small parts are in place and are not left loose inside the case. Metallic parts or metal flakes can cause electrical shorts.



CAUTION: Please note that the following illustrations may not look exactly like the rackmount server you purchased. Therefore, the illustrations should be held for your reference only.

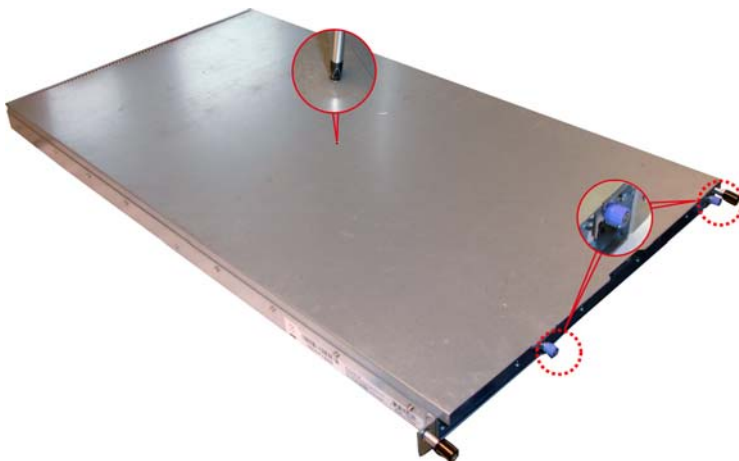
2.1 Installing Motherboard Components

This section describes how to install components on to the motherboard, including CPUs, memory modules, HDD and PCI-E cards.

2.1.1 Removing the Chassis Cover

Follow these instructions to remove the GF83-B7074 chassis cover.

1. Loosen the screw on the top and the thumb screws on the front.



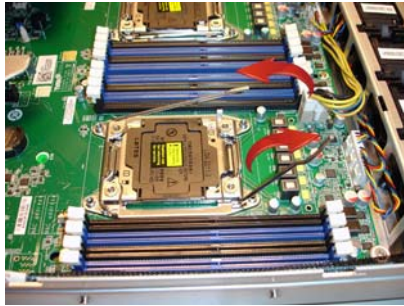
2. Slide the top cover backward and then lift it up.



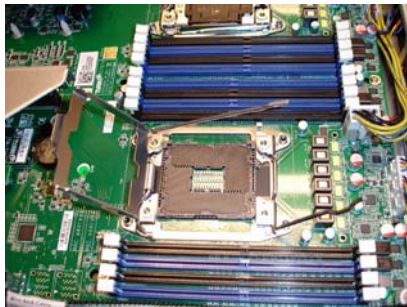
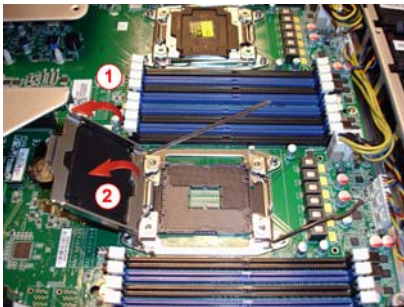
2.1.2 Installing the CPU and Heatsink

Follow the steps below to install CPUs and CPU heatsinks.

1. Locate the CPU sockets. Always start with CPU0 first.
2. Pull the levers slightly away from the socket and then push them to a fully open position.



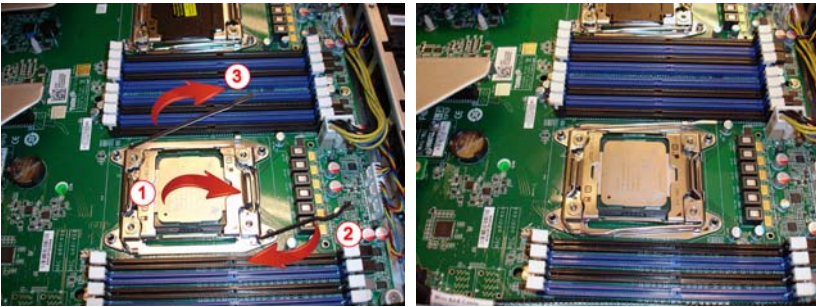
3. Lift the CPU socket cover to a fully open position. Remove the protection cap from the CPU socket.



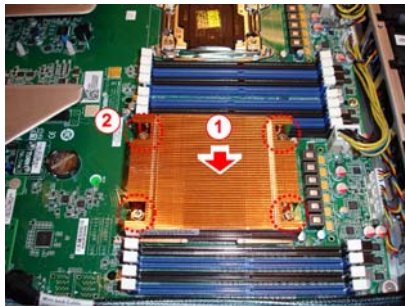
4. Place the CPU into the socket making sure that the gold arrow is located in the right direction.



5. Close the CPU socket cover. Press the levers down to secure the CPU.



6. Position the heatsink on top of the CPU and secure it with 4 screws.

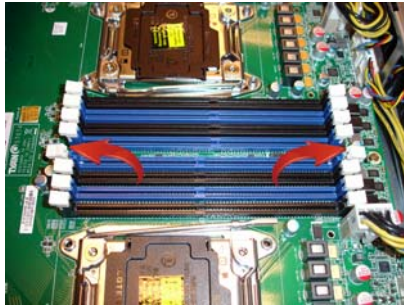


7. Repeat steps 2 to 6 to install the second CPU and heatsink.

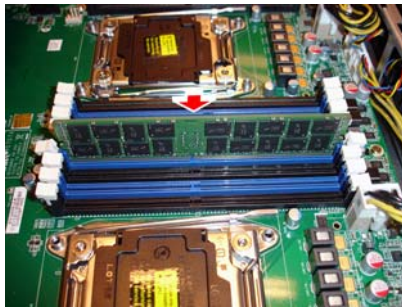
2.1.3 Installing the Memory

Follow these instructions to install the memory modules onto the motherboard.

1. Locate the memory slots on the motherboard.
2. Press the memory slot locking levers in the direction of the arrows as shown in the following illustration.



3. Align and insert the memory module down onto the slot. When inserted properly, the memory slot locking levers lock automatically on the indentations at the ends of the module. Follow the recommended memory population table to install the other memory modules.





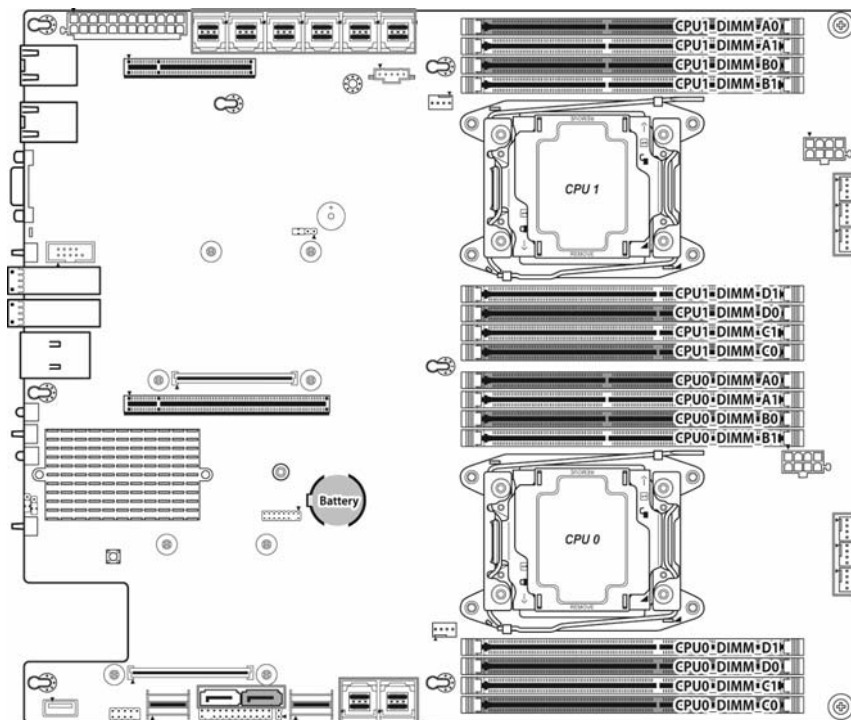
Recommended Memory Population Table

Single CPU Installed (CPU0 only)	Quantity of memory installed							
	1	2	3	4	5	6	7	8
CPU0_DIMM_A0	√	√	√	√	√	√	√	√
CPU0_DIMM_A1					√	√	√	√
CPU0_DIMM_B0		√	√	√	√	√	√	√
CPU0_DIMM_B1						√	√	√
CPU0_DIMM_C0			√	√	√	√	√	√
CPU0_DIMM_C1							√	√
CPU0_DIMM_D0				√	√	√	√	√
CPU0_DIMM_D1								√
CPU1_DIMM_A0								
CPU1_DIMM_A1								
CPU1_DIMM_B0								
CPU1_DIMM_B1								
CPU1_DIMM_C0								
CPU1_DIMM_C1								
CPU1_DIMM_D0								
CPU1_DIMM_D1								
NOTE: 1. √ indicates a populated DIMM slot. 2. Use paired memory installation for max performance. 3. Populate the same DIMM type in each channel, specifically - Use the same DIMM size - Use the same # of ranks per DIMM 4. Dual-rank DIMMs are recommended over single-rank DIMMs. 5. Un-buffered DIMM can offer slightly better performance than registered DIMM if populating only a single DIMM per channel. 6. Always install with CPU0 Socket and DIMM_0 Slot first, following the alphabetical order.								

Dual CPU Installed (CPU0 and CPU1)	Quantity of memory installed							
	2	4	6	8	10	12	14	16
CPU0_DIMM_A0	√	√	√	√	√	√	√	√
CPU0_DIMM_A1					√	√	√	√
CPU0_DIMM_B0		√	√	√	√	√	√	√
CPU0_DIMM_B1						√	√	√
CPU0_DIMM_C0			√	√	√	√	√	√
CPU0_DIMM_C1							√	√
CPU0_DIMM_D0				√	√	√	√	√
CPU0_DIMM_D1								√
CPU1_DIMM_A0	√	√	√	√	√	√	√	√
CPU1_DIMM_A1					√	√	√	√
CPU1_DIMM_B0		√	√	√	√	√	√	√
CPU1_DIMM_B1						√	√	√
CPU1_DIMM_C0			√	√	√	√	√	√
CPU1_DIMM_C1							√	√
CPU1_DIMM_D0				√	√	√	√	√
CPU1_DIMM_D1								√

NOTE:

1. √ indicates a populated DIMM slot.
2. Use paired memory installation for max performance.
3. Populate the same DIMM type in each channel, specifically
 - Use the same DIMM size
 - Use the same # of ranks per DIMM
4. Dual-rank DIMMs are recommended over single-rank DIMMs.
5. Un-buffered DIMM can offer slightly better performance than registered DIMM if populating only a single DIMM per channel.
6. Always install with CPU0 Socket and DIMM_0 Slot first, following the alphabetical order.

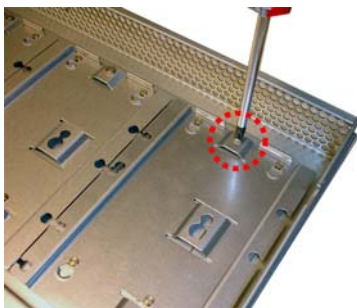


2.1.4 Installing HDD

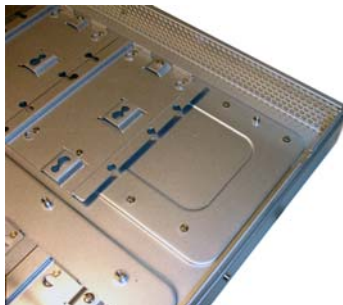
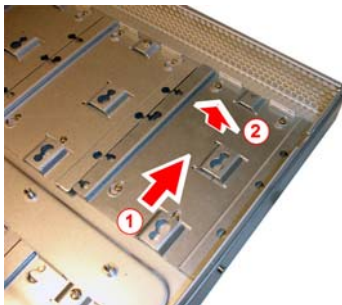
Follow these instructions to install hard drives.

B7074G83V8 3.5" HDD

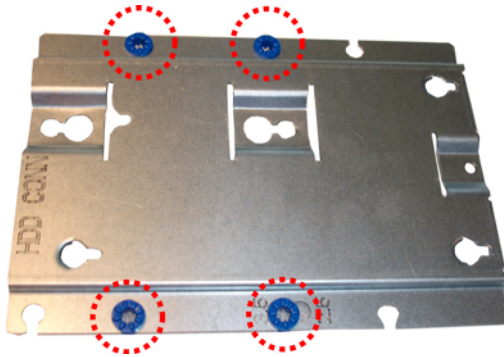
1. Unscrew the HDD tray.



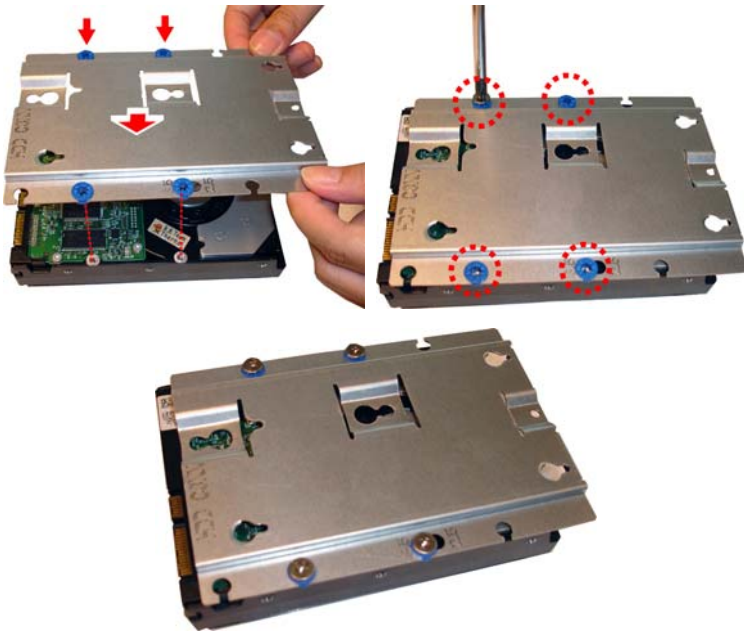
2. Slide the HDD tray forward to lift it up.



3. Insert the blue rubber stubs into the screw holes.



4. Align the 3.5" hard drive with the HDD tray and use 4 screws securing the hard drive to the HDD tray.

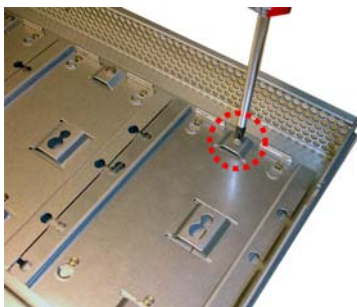


4. Put the HDD tray back into the chassis and screw it firmly to the chassis. Connect the SATA power cable and SATA cable.

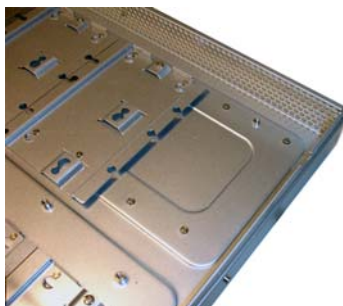
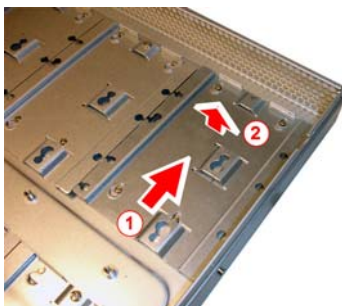


B7074G83V8 2.5" HDD

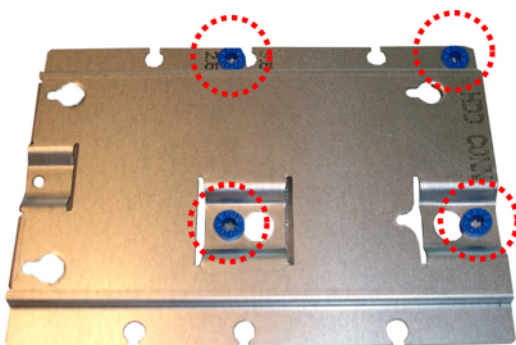
1. Unscrew the HDD tray.



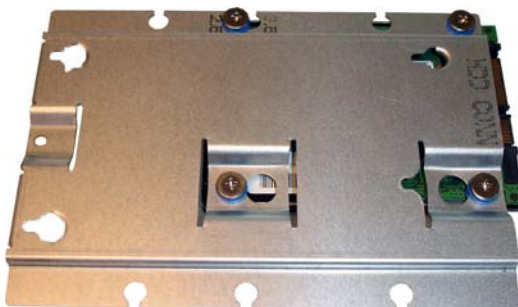
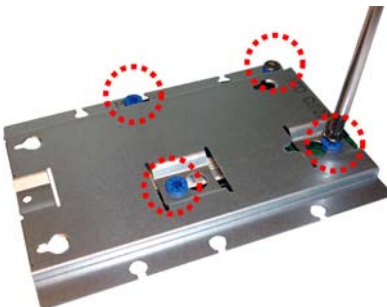
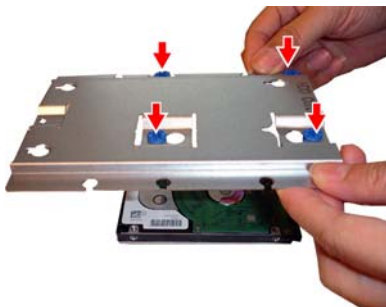
2. Slide the HDD tray forward to lift it up.



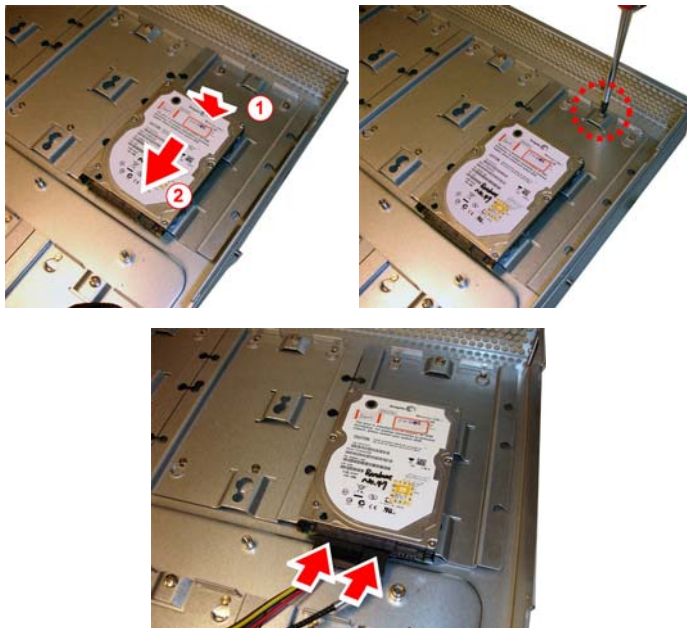
3. Insert the blue rubber stubs into the screw holes.



4. Align the 2.5" hard drive with the HDD tray and use 4 screws securing the hard drive to the HDD tray.

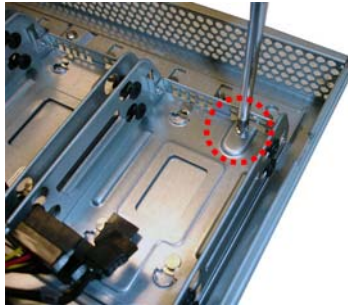


5. Put the HDD tray back into the chassis and screw it firmly to the chassis. Connect the SATA power cable and SATA cable.

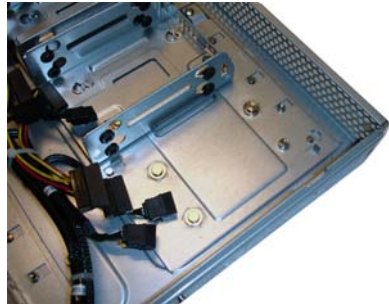
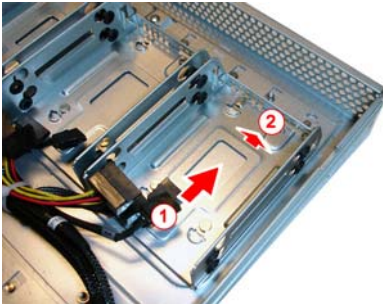


B7074G83W18 2.5" HDD

1. Unscrew the HDD tray.



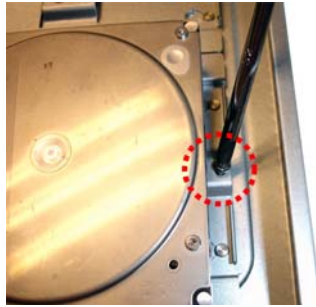
2. Slide the HDD tray forward to lift it up.



3. Place the hard drive into the HDD tray and use 4 screws securing the hard drive to the HDD tray.

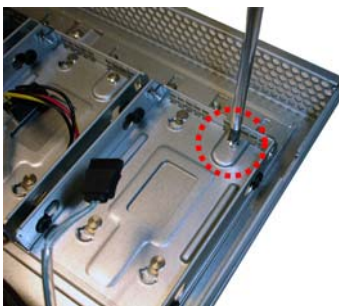


6. Put the HDD tray back into the chassis and screw it firmly to the chassis. Connect the SATA power cable and SATA cable.

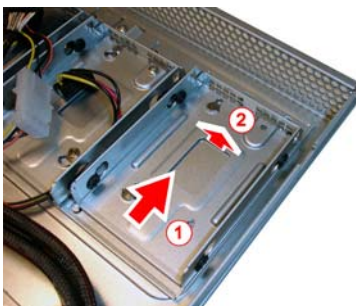


B7074G83V8E2 2.5" + PCIE HDD

1. Unscrew the HDD tray.



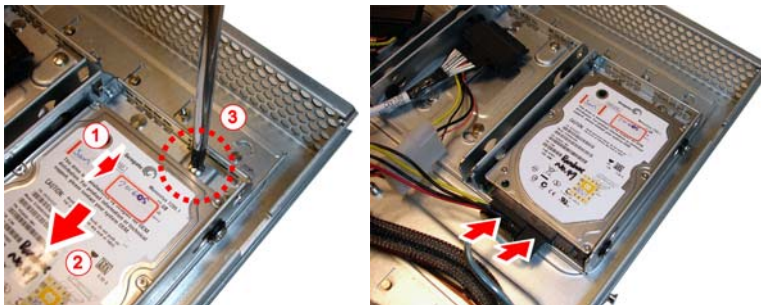
2. Slide the HDD tray forward to lift it up.



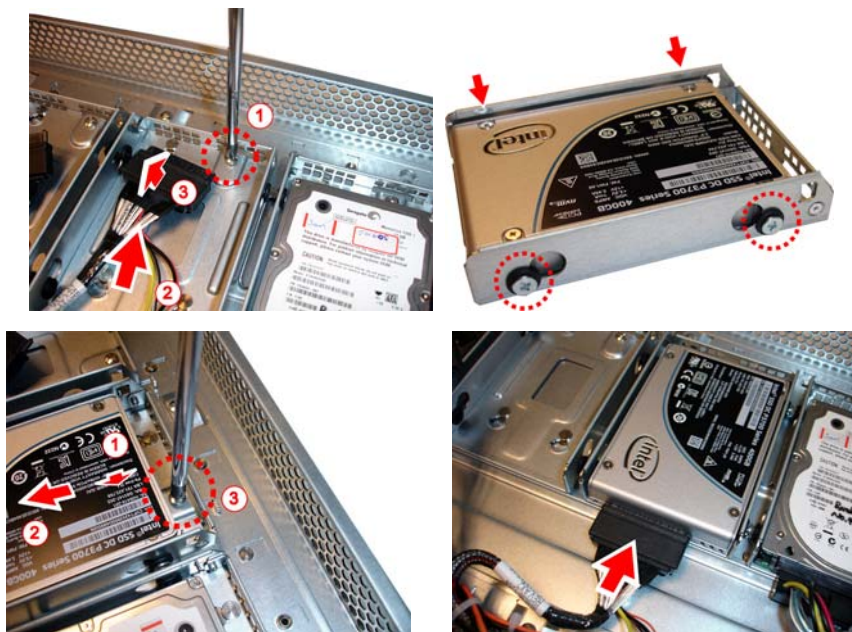
3. Place the hard drive into the HDD tray and use 4 screws securing the hard drive to the HDD tray.



- Put the HDD tray back into the chassis and screw it firmly to the chassis. Connect the SATA power cable and SATA cable.



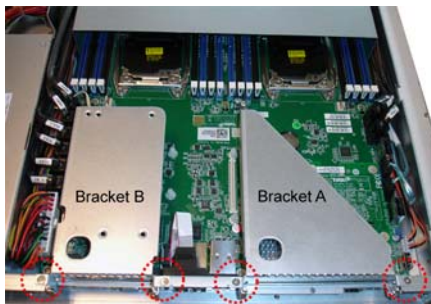
- Follow Step 1~4 to install the PCI-E HDD.



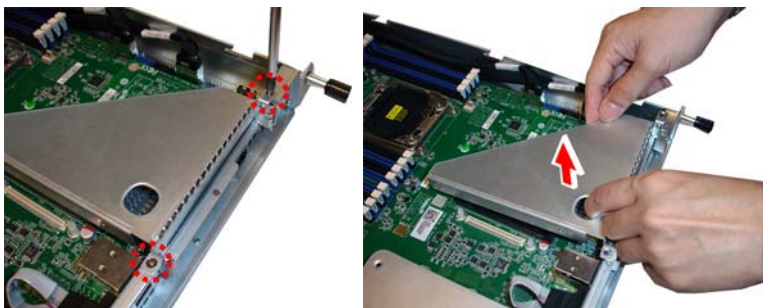
2.1.5 Installing Expansion Cards

Follow these instructions to install expansion cards.

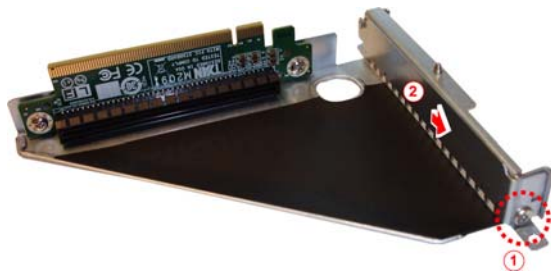
1. Unscrew the Riser Card Brackets A & B.



2. Unscrew to lift up the Riser Card Bracket A.



3. Unscrew to take out the dummy bracket.

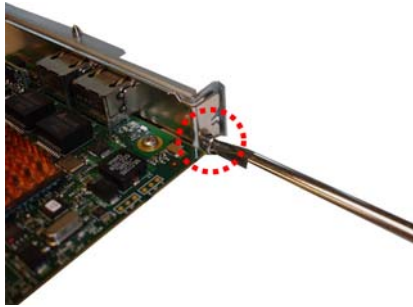




4. Install a **full-height** card to the Riser Card Bracket A.



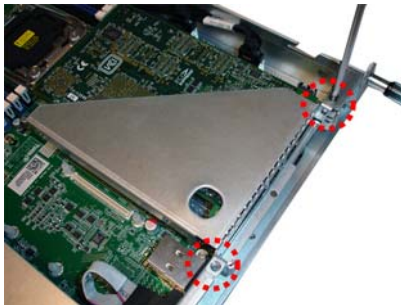
5. Screw the card firmly to the bracket.



6. Place the Riser Card Bracket A back into the chassis.



7. Screw the Riser Card Bracket A to the chassis.



8. Follow the procedures described earlier to install a **half-height** card to the Riser Card Bracket B.

2.2 Rack Mounting



CAUTION: Please note that the following illustrations are based on a GF83-B7074 barebone which may not look exactly like the rackmount server you purchased. Therefore, the illustrations should be held for your reference only.

After installing the necessary components, the TYAN GF83-B7074 can be mounted in a rack using the supplied rack mounting kit.

Rack mounting kit

Sliding Rails x 2

Mounting Ears x 2

2.2.1 Installing the Server in a Rack

Follow these instructions to mount the TYAN GF83-B7074 into an industry standard 19" rack.

NOTE: Before mounting the TYAN GF83-B7074 in a rack, ensure that all internal components have been installed and that the unit has been fully tested.

However, to make the installation easier, we suggest that you remove all HDD trays before you insert the chassis into the rack.

2.2.2 Installing the inner Rails to the Chassis

1. Release and detach the inner rail from the sliding rail.



2. Align the inner sliding rail on one side of the server.



3. Pull the inner sliding rail forward to secure it to the chassis.

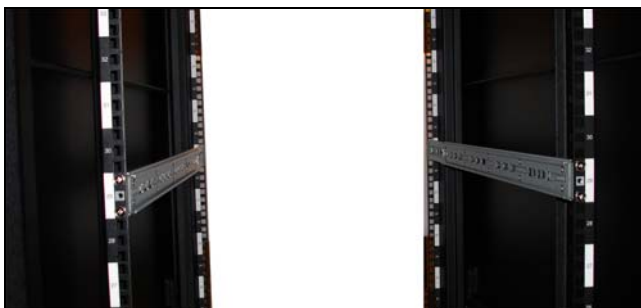


4. Align the inner sliding rail on the other side of the server.



2.2.2 Installing the Outer Rails to the Rack

1. Secure the outer rails to the rack.



2.2.3 Rack mounting the Server

1. Lift the unit and then insert the inner slide rails into the middle rails.



2. Push the whole system into the rack.



3. Secure the whole system to the rack with 2 thumb screws.



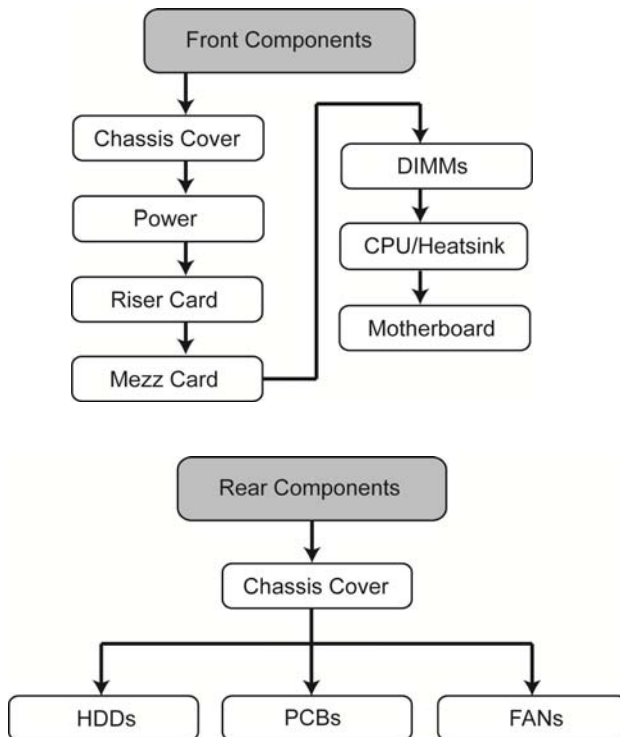
Chapter 3: Replacing Pre-Installed Components

3.1 Introduction

This chapter explains how to replace the pre-installed components, including the [S7074 Motherboard](#), [M7094-2308-8I LSI SAS Mezz Card](#), [M7062-B811-1T OCP Card](#), System fan, Power supply unit etc.

3.2 Disassembly Flowchart

The following flowchart outlines the disassembly procedure.



3.3 Removing the Cover

Before replacing any parts you must remove the chassis cover. Follow Section 2.1.1

2.1.1 Removing the Chassis Cover (page 35) to remove the cover of the GF83-B7074.

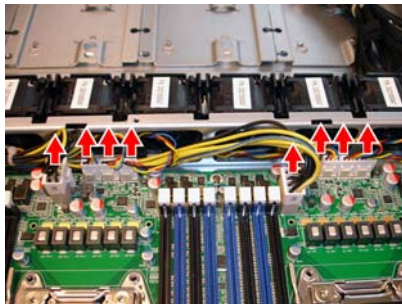
3.4 Replacing Motherboard Components

Follow these instructions to replace motherboard components, including the motherboard.

3.4.1 Disconnecting All Motherboard Cables

Follow these instructions to remove all cables.

1. Disconnect all cables.

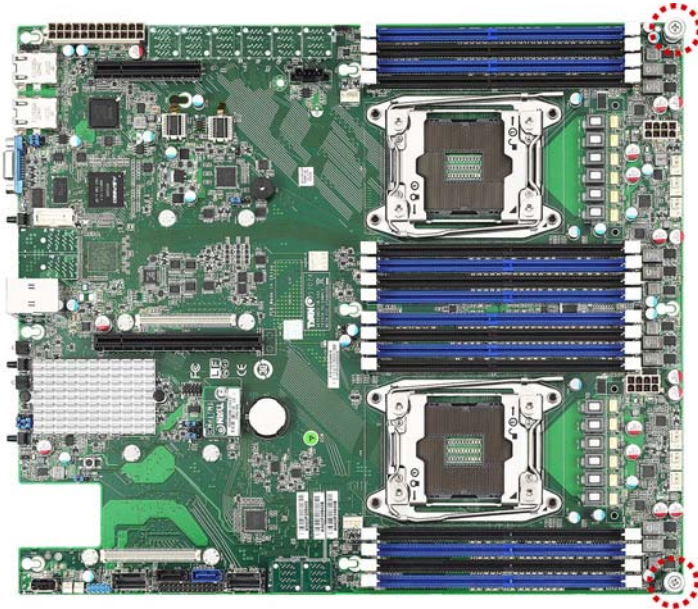




3.4.2 Removing the Motherboard

After removing all of the aforementioned cables, follow the instructions below to remove the motherboard from the chassis.

- 1 Remove the heatsinks and processors if installed.
- 2 Loosen the two thumb screws securing the motherboard to the chassis.



- 3 Carefully lift the motherboard from the chassis.

3.5 Replacing the TPM and OCP LAN Card

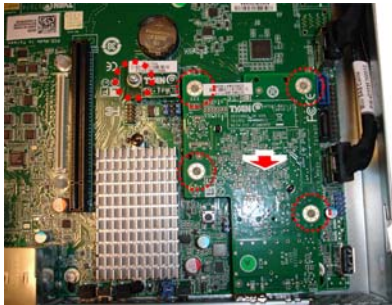
Follow these instructions to replace the TPM and OCP LAN Card.

NOTE: The OCP LAN Card is an optional part. Please contact your local dealer for purchase.

1. Unscrew the TPM Card to replace with a new one. Lift the OCP LAN Card up to replace with a new one.



2. Follow the procedure described earlier in reverse order to install the TPM and OCP LAN Card back into the chassis.



3.6 Replacing the SAS Card

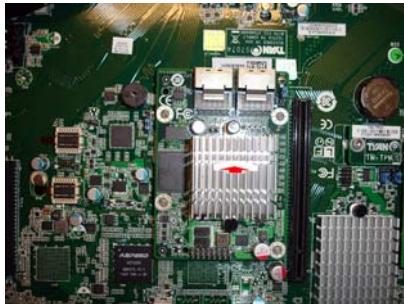
Follow these instructions to replace the LSI SAS Card.

NOTE: The LSI SAS Card is for B7074G83W18 only.

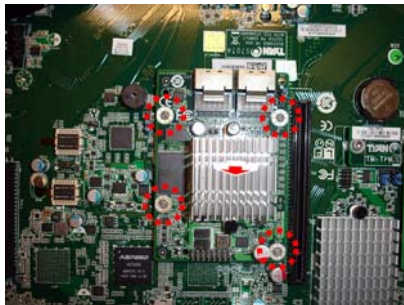
1. Disconnect the SAS cables from the SAS Card.



2. Lift the SAS Card up from the chassis.



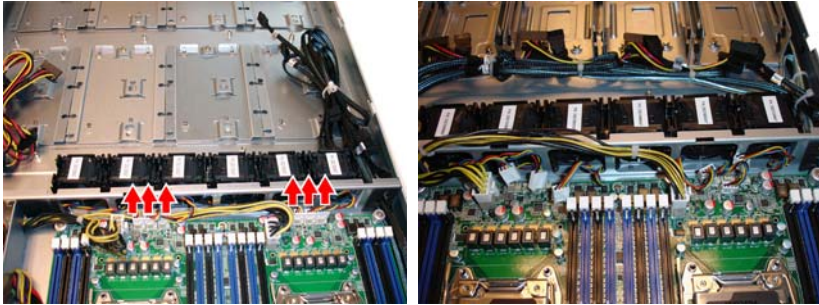
3. After replacing with a new SAS Card, follow the procedure described earlier in reverse order to install the SAS Card back into the chassis.



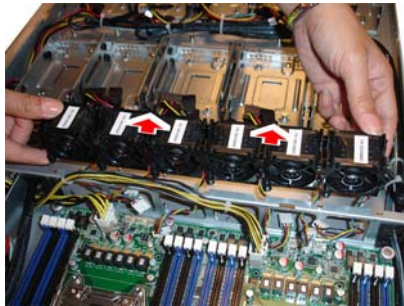
3.7 Replacing the System Fan

Follow these instructions to replace the system fan.

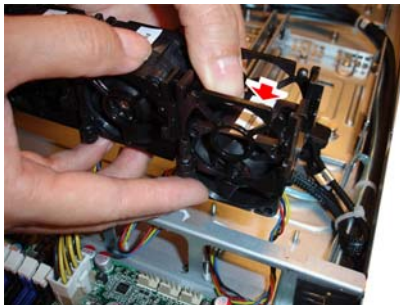
1. Disconnect the fan cable from the mainboard.



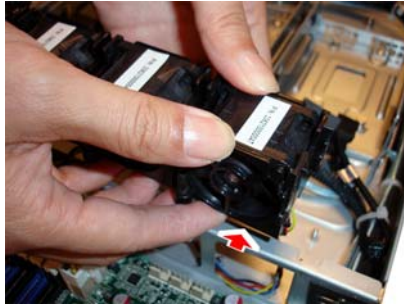
2. Take out the failed fans.



3. Push the fan away from the fan cage to replace with a new one.



4. After replacing a new fan, push the fan back into the fan cage.

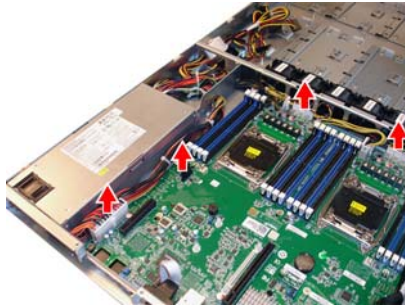


5. Follow Step 1 & 2 in reverse order to reinstall the fan.
6. Connect the fan cable to the mainboard connector.

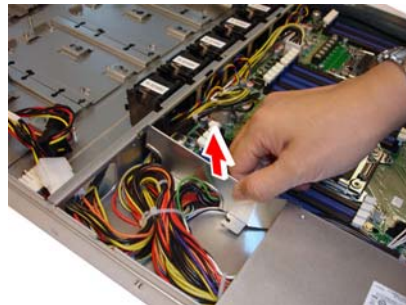
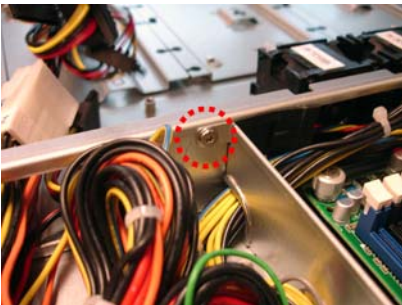
3.8 Replacing the Power Supply

Follow these instructions to replace the power supply.

1. Disconnect all power cables.



2. Unscrew to remove the air duct.



3. Unscrew the power supply.



4. Take out the power supply.



4. After replacing a new power supply, follow Step 1~3 in reverse order to reinstall the power supply.
5. Connect the power cables to the Mainboard.

Chapter 4: Motherboard Information

You are now ready to install your motherboard.

How to install our products right... the first time

The first thing you should do is read this user's manual. It contains important information that will make configuration and setup much easier. Here are some precautions you should take when installing your motherboard:

- (1) Ground yourself properly before removing your motherboard from the antistatic bag. Unplug the power from your computer power supply and then touch a safely grounded object to release static charge (i.e. power supply case). For the safest conditions, MiTAC recommends wearing a static safety wrist strap.
- (2) Hold the motherboard by its edges and do not touch the bottom of the board, or flex the board in any way.
- (3) Avoid touching the motherboard components, IC chips, connectors, memory modules, and leads.
- (4) Place the motherboard on a grounded antistatic surface or on the antistatic bag that the board was shipped in.
- (5) Inspect the board for damage.

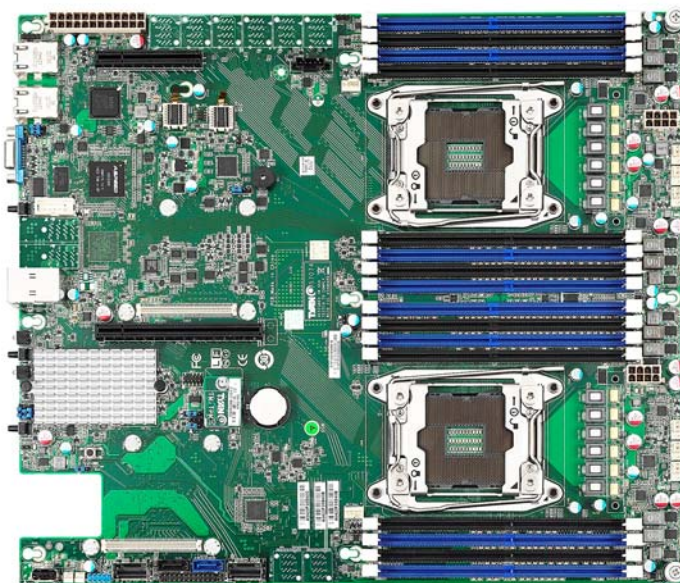
The following pages include details on how to install your motherboard into your chassis, as well as installing the processor, memory, disk drives and cables.



Caution!

1. To avoid damaging the motherboard and associated components, do not use torque force greater than **7kgf/cm (6.09 lb/in)** on each mounting screw for motherboard installation.
2. Do not apply power to the board if it has been damaged.

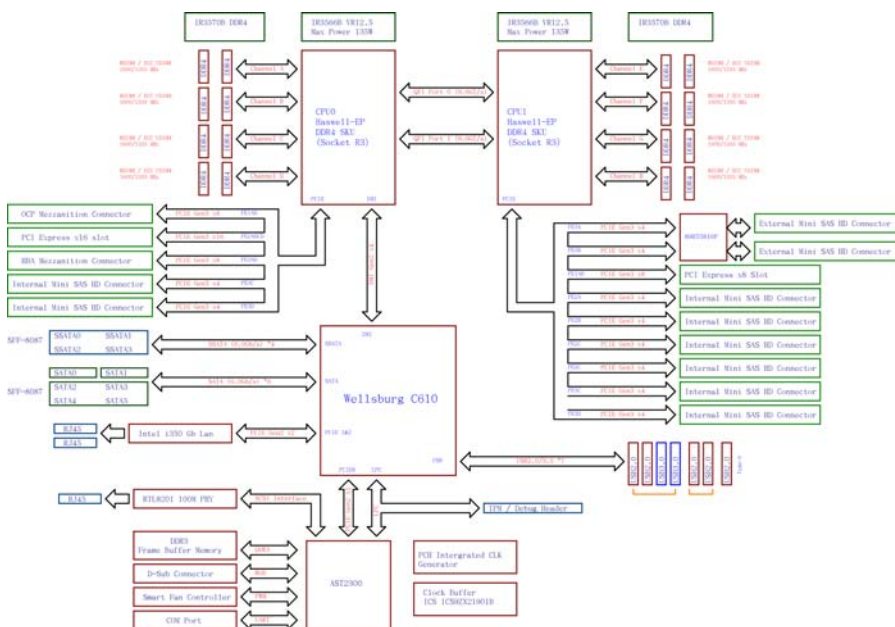
4.1 Board Image



S7074GM2NR-B

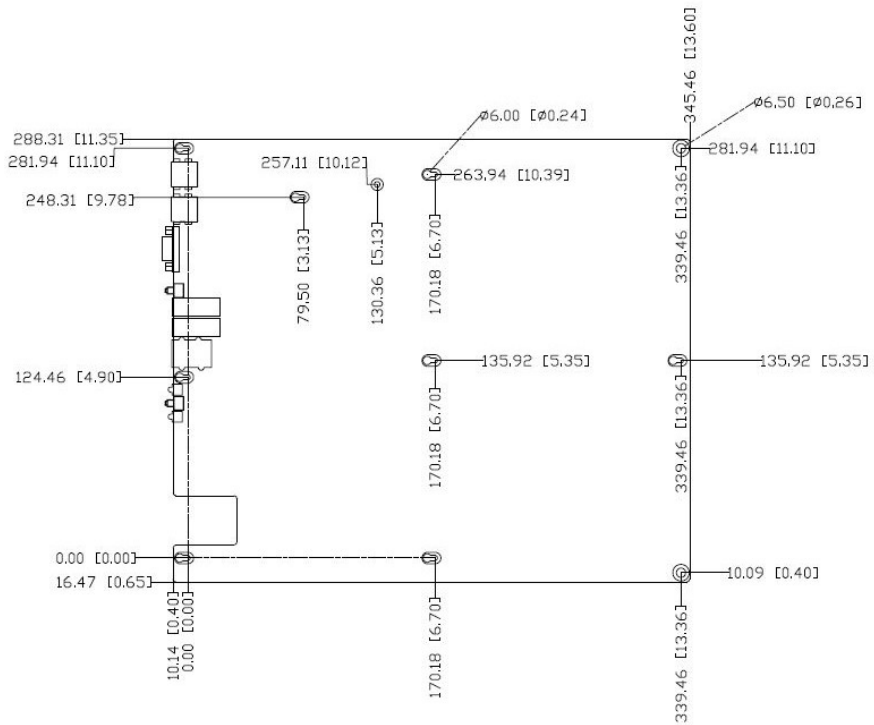
This picture is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above picture.

4.2 Block Diagram

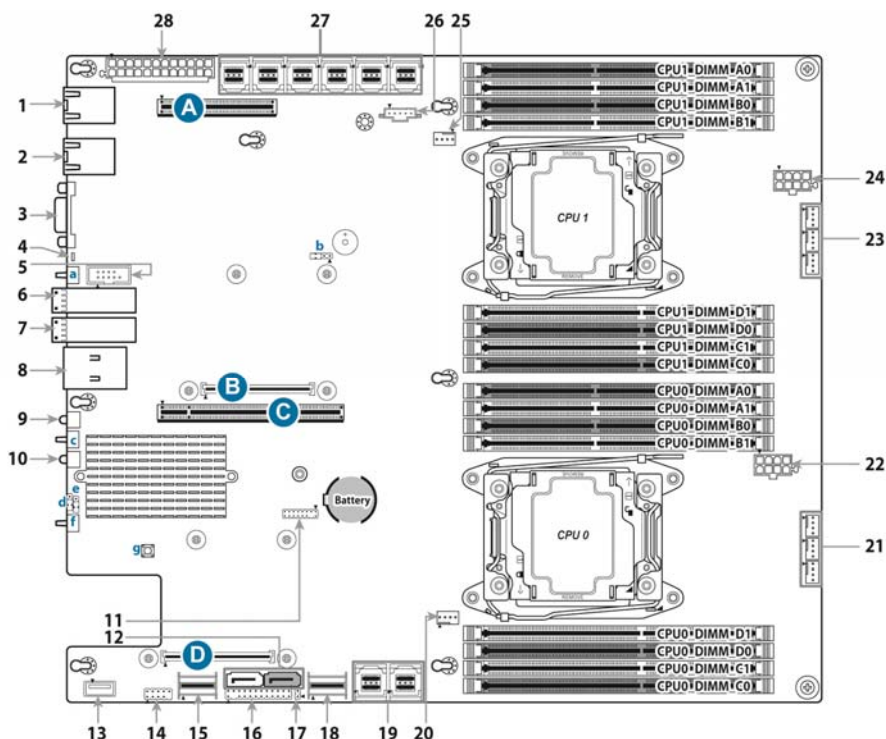


S7074 Block Diagram

4.3 Motherboard Mechanical Drawing



4.4 Board Parts, Jumpers and Connectors



This diagram is representative of the latest board revision available at the time of publishing. The board you receive may not look exactly like the above diagram. The DIMM slot numbers shown above can be used as a reference when reviewing the DIMM population guidelines shown later in the manual. For the latest board revision, please visit our web site at <http://www.tyan.com>.

Jumpers & Connectors

Connectors	
1. i350 LAN Port 1 (LAN1)	15. 4-in-1 Mini-SAS Connector with PCH sSATA Port 0~3 (J25)
2. i350 LAN Port 2 (LAN2)	16. Front Panel Header (FPIO1)
3. VGA Port (VGA1)	17. Chassis Intrusion Header (2PHD_1)
4. ID LED (ID_LED1)	18. 4-in-1 Mini-SAS Connector with PCH SATA Port 2~5 (J23)
5. COM Header (J13)	19. Mini-SAS HD Connector with PCIE x4 signal (J3/J4)
6. PCIE External Port (CPU1 PE3B) (J16)	20. CPU0 FAN Connector (J9)
7. PCIE External Port (CPU1 PE3A) (J15)	21. SYS_FAN_4/5/6 Connector (SYS_FAN_4/SYS_FAN_5/SYS_FAN_6)
8. RJ45 LAN Port + USB3.0 Ports (LAN3)	22. SSI 8-pin Power Connector (PW2)
9. PWR LED (D1)	23. SYS_FAN_1/2/3 Connector (SYS_FAN_1/SYS_FAN_2/SYS_FAN_3)
10. HDD LED (D2)	24. SSI 8-pin Power Connector (PW3)
11. TPM Header (DBG_HD1)	25. CPU1 FAN Connector (J18)
12. SATA3.0 Connector (SATA0/SATA1)	26. PSIM1 Connector (PSIM1)
13. Vertical Type-A USB2.0 Connector (A_USB1)	27. Mini SAS HD Connector with PCIE x4 signal (J5/J6/J7/J8/J11/J12)
14. USB2.0 Front Panel Header (USB2_1)	28. ATX 24-pin Power Connector (PW1)
Slots	
a. ID LED Button (IDLED_BTN1)	A. PCIE x8 half height card (PCIE_3)
b. Beep Header (4PHD_12)	B. HBA Connector (J2)
c. Power Button (PWR_BTN1)	C. PCIE x16 full height card (PCIE_6)
d. Flash Security Override Pin Header (3PHD_8)	D. OCP connector (j1)
e. ME Recovery Mode Jumper (3PHD_4)	
f. Reset Button (RST_BTN1)	
g. Clear COMS Button (CLEAR_BTN1)	

Jumper Legend

	OPEN - Jumper OFF	Without jumper cover
	CLOSED - Jumper ON	With jumper cover

LEDs & Buttons

Location	Description	Function
RST_BTN1	Reset button	System reset
PWR_BTN1	Power button	System power on/off
IDLED_BTN1	ID Button	Turn on/off ID LED
D1	Power LED (Green)	S4/S5:OFF; S0: always ON
D2	HDD LED (Green)	Blinking during anyone HDD is accessed
ID_LED1	ID LED (Blue)	Both ID button and BMC can turn on/off ID LED.

LED Definitions

ID_LED1	Rear ID LED	Pin	Signal	
		+	+VCC3_AUX	
		-	REAR_ID_LED_N	
		State	Description	
		OFF	OFF	System not identified
		ON	Blue	System identified
NOTE: Both ID button and BMC can turn on/off ID LED.				
D1	Power LED	Pin	Signal	
		+	VCC3	
		-	GND	
		State	Description	
		OFF	OFF	S4/S5 state
		ON	Green	S0 state: always ON
D2	HDD LED	Pin	Signal	
		1	HD_G_LED_P	
		2	GND	
		State	Description	
		OFF	OFF	HDD idle
		Blinking	Green	HDD active

SYS_FAN_1/2/3/4/5/6 & J9/J18: 4-Pin FAN Connector

	Pin	1	2	3	4
	Signal	GND	P12V	FAN_TACH	FAN_PWM
Use this header to connect the cooling fan to your motherboard to keep the system stable and reliable. J9: CPU0 FAN Connector J18: CPU1 FAN Connector					

2PHD_1: Chassis Intrusion Header

 PIN1 open	Pin	1	2
	Signal	INTRUDER#	GND
 PIN1 Short (Default)	Open: Use this header to trigger the system chassis intrusion alarm. Short: Use this header to disable the system chassis intrusion alarm.		

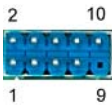
FPIO1: Front Panel Header

	Signal	Pin	Pin	Signal
	PW_LED+	1	2	FP_PWER (3.3V)
	KEY	3	4	NA
	PW_LED-	5	6	NA
	HD_LED+	7	8	HWM_FAULT_LED-
	HD_LED-	9	10	SYS_FAULT_LED-
	PW_SW#	11	12	LAN1_ACTLED+
	GND	13	14	LAN1_ACTLED-
	RST_SW#	15	16	SDA
	GND	17	18	SCL
	NA	19	20	INTRUDER#
	FPIO_TEMP_IN	21	22	LAN2_ACTLED+
	NMI_SW#	23	24	LAN2_ACTLED-

PSIM1: PSMI Connector

	Pin	1	2	3	4	5
	Signal	SMB_CLK	SMB_DAT	PSU_SMBALERT_N	GND	V3.3

USB2_1: Front USB2.0 Header (blue)

	Signal	Pin	Pin	Signal
	+5V	1	2	+5V
	USB DATA1-	3	4	USB DATA2-
	USB DATA1+	5	6	USB DATA2+
	GND	7	8	GND
	KEY	9	10	GND

DBG_HD1: TPM Header

	Signal	Pin	Pin	Signal
	P3V3	1	2	FRAME_N
	LAD0	3	4	KEY
	LAD1	5	6	PLT_RST_N
	LAD2	7	8	GND
	LAD3	9	10	CLK_33M
	DBG_SERIRQ	11	12	GND
	DBG_PRESEN	13	14	VCC3_AUX
	TPM_ADDR_MB	15	16	PCH_TPM_PP_EN

A_USB1: Vertical Type-A USB Connector

	Pin	1	2	3	4
	Signal	+5V	USB DATA2-	USB DATA2+	GND

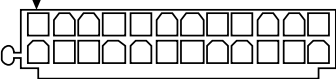
SATA0/SATA1: SATA3.0 Connector

	1	GND	Connects to the Serial ATA ready drives via the Serial ATA cable.
	2	SATA TX DP	
	3	SATA TX DN	
	4	GND	
	5	SATA RX DN	
	6	SATA RX DP	
	7	GND	

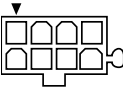
CLEAR_BTN1: RTC Reset Button for Clear CMOS

	Pin	1, 2	3, 4
	Signal	GND	RST_N

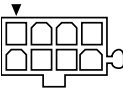
PW1: ATX 24-pin Main Power Connector

	Signal	Pin	Pin	Signal
	+3.3V	1	13	+3.3V
	+3.3V	2	14	-12V
	GND	3	15	GND
	+5V	4	16	PS_ON
	GND	5	17	GND
	+5V	6	18	GND
	GND	7	19	GND
	Power Good	8	20	NC
	5VSB	9	21	+5V
	+12V	10	22	+5V
	+12V	11	23	+5V
	+3.3V	12	24	GND

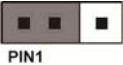
PW2: SSI 8-pin CPU0 Power Connector

	Signal	Pin	Pin	Signal
	GND	1	5	P12V_DDR3_CPU0
	GND	2	6	P12V_DDR3_CPU0
	GND	3	7	P12V_CPU0
	GND	4	8	P12V_CPU0

PW3: SSI 8-pin CPU1 Power Connector

	Signal	Pin	Pin	Signal
	GND	1	5	P12V_DDR3_CPU1
	GND	2	6	P12V_DDR3_CPU1
	GND	3	7	P12V_CPU1
	GND	4	8	P12V_CPU1

3PHD_8: Flash Security Override Pin Header

	Pin	1	2	3
	Signal	NC	MFG_MODE_N	GND
	Pin 1-2 closed: Normal (Default) Pin 2-3 closed: Security Override			

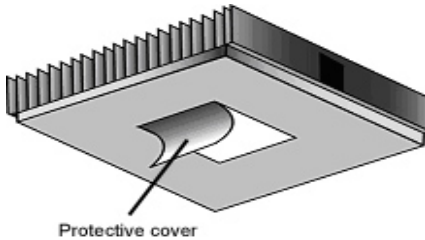
3PHD_4: ME Recovery Mode Jumper

 PIN1	Pin	1	2	3
	Signal	NC	FM_ME_RCVR_N	GND
	Pin 1-2 closed: Normal (Default) Pin 2-3 closed: ME Recovery Mode			

4PHD_12: Buzzer Disable Jumper

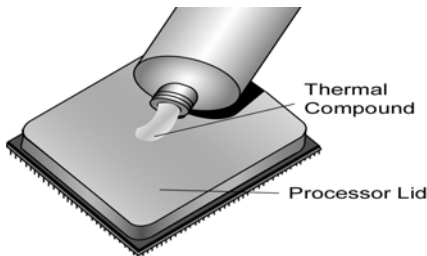
 4 1 4 1 4 1	Pin	1	2	3	4
	Signal	VCC5	NA	BUZ_1	BUZ_2
	Pin 3-4 closed: Normal Mode (Default) Pin 2-3 closed: Disable PC Beep Pin 1&4 closed: Use the External Speaker				

4.5 Thermal Interface Material



There are two types of thermal interface materials designed for use with the processors.

The most common material comes as a small pad attached to the heat sink at the time of purchase. There should be a protective cover over the material. Take care not to touch this material. Simply remove the protective cover and place the heat sink on the processor.

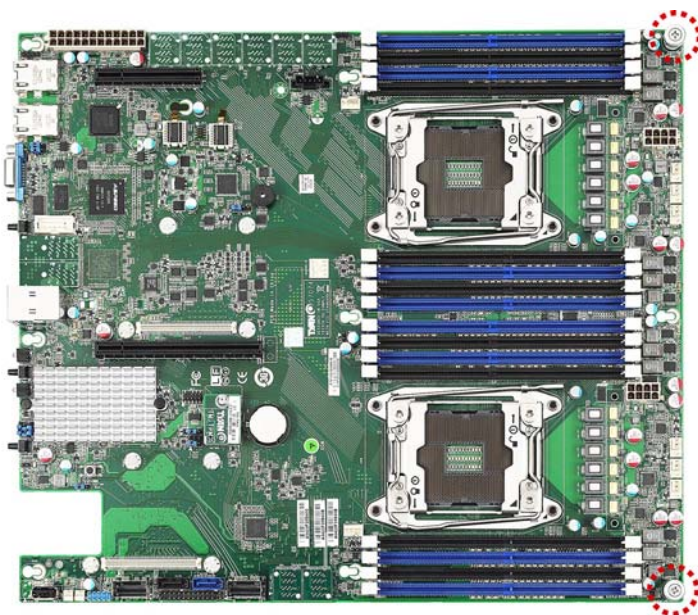


The second type of interface material is usually packaged separately. It is commonly referred to as 'thermal compound'. Simply apply a thin layer on to the CPU lid (applying too much will actually reduce the cooling).

NOTE: Always check with the manufacturer of the heat sink & processor to ensure that the thermal interface material is compatible with the processor and meets the manufacturer's warranty requirements.

4.6 Tips on Installing Motherboard in Chassis

Before installing your motherboard, make sure your chassis has the necessary motherboard support studs installed. These studs are usually metal and are gold in color. Usually, the chassis manufacturer will pre-install the support studs. If you are unsure of stud placement, simply lay the motherboard inside the chassis and align the screw holes of the motherboard to the studs inside the case. If there are any studs missing, you will know right away since the motherboard will not be able to be securely installed. Position the mainboard into the chassis and push it to lock in place. Use two thumb screws to secure it to the chassis.

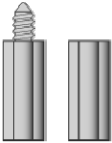
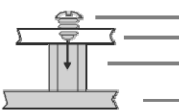
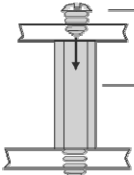
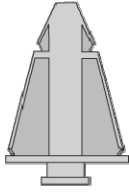
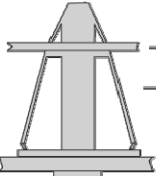
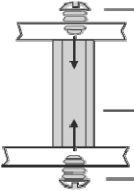
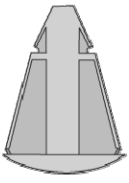
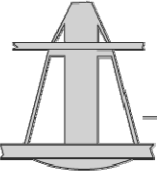


NOTE: Be especially careful to look for extra stand-offs. If there are any stand-offs present that are not aligned with a mounting hole on the motherboard, it will likely short components on the back of the motherboard when installed. This will cause malfunction and/or damage to your motherboard.

Some chassis include plastic studs instead of metal. Although the plastic studs are usable, MiTAC recommends using metal studs with screws that will fasten the motherboard more securely in place.

Below is a chart detailing what the most common motherboard studs look like and how they should be installed.

Mounting the Motherboard

Type	Solutions for installing	
	 - Screw - Motherboard - Stud - Chassis wall	 - Screw - Motherboard - Stud - Chassis wall
	 - Motherboard - Standoff - Chassis wall	 - Screw - Motherboard - Stud - Chassis wall - Screw
	 - Motherboard - Standoff - Chassis wall	

4.7 Finishing Up

Congratulations on making it this far! You have finished setting up the hardware aspect of your computer. Before closing up your chassis, make sure that all cables and wires are connected properly, especially SATA cables and most importantly, jumpers. You may have difficulty powering on your system if the motherboard jumpers are not set correctly.

In the rare circumstance that you have experienced difficulty, you can find help by asking your vendor for assistance. If they are not available for assistance, please find setup information and documentation online at our website or by calling your vendor's support line.

Chapter 5: BIOS Setup

5.1 About the BIOS

The BIOS is the basic input/output system, the firmware on the motherboard that enables your hardware to interface with your software. The BIOS determines what a computer can do without accessing programs from a disk. The BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions. This chapter describes the various BIOS settings that can be used to configure your system.

The BIOS section of this manual is subject to change without notice and is provided for reference purposes only. The settings and configurations of the BIOS are current at the time of print and are subject to change, and therefore may not match exactly what is displayed on screen.

This section describes the BIOS setup program. The setup program lets you modify basic configuration settings. The settings are then stored in a dedicated, battery-backed memory (called NVRAM) that retains the information even when the power is turned off.

To start the BIOS setup utility:

1. Turn on or reboot your system.
2. Press <F2> or <Del> during POST to start the BIOS setup utility.

5.1.1 Setup Basics

The table below shows how to navigate in the setup program using the keyboard.

Key	Function
<F1>	General help window
<ESC>	Exit current menu
←arrow → keys	Select a different menu
↑ or ↓ arrow keys	Move cursor up/down
<Home> / <End>	Move cursor to top/bottom of the window
<PgUp> / <PgDn>	Move cursor to next/previous page
<->	Select the previous value/setting of the field
<+>	Select the next value/setting of the field
<F3>	Load the Optimal default configuration values of the menu
<F4>	Save and exit
<Enter>	Execute command or select submenu

5.1.2 Getting Help

Pressing [**F1**] will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press [**ESC**] or the [**Enter**] key again.

5.1.3 In Case of Problems

If you have trouble booting your computer after making and saving the changes with the BIOS setup program, you can restart the computer by holding the power button down until the computer shuts off (usually within 4 seconds); resetting by pressing CTRL-ALT-DEL; or clearing the CMOS.

The best advice is to only alter settings that you thoroughly understand. In particular, do not change settings in the Chipset section unless you are absolutely sure of what you are doing. The Chipset defaults have been carefully chosen either by MiTAC or your system manufacturer for best performance and reliability. Even a seemingly small change to the Chipset setup options may cause the system to become unstable or unusable.

5.1.4 Setup Variations

Not all systems have the same BIOS setup layout or options. While the basic look and function of the BIOS setup remains more or less the same for most systems, the appearance of your Setup screen may differ from the charts shown in this section. Each system design and chipset combination requires a custom configuration. In addition, the final appearance of the Setup program depends on the system designer. Your system designer may decide that certain items should not be available for user configuration, and remove them from the BIOS setup program.

NOTE: The following pages provide the details of BIOS menu. Please be aware that the BIOS menus are continually changing due to continual BIOS updates over the product lifespan of the motherboard. The BIOS menus provided are current as of the date when this manual was written. Please visit TYAN's website at <http://www.tyan.com> for information on BIOS updates available for this specific motherboard.

5.2 Main Menu

In this section, you can alter general features such as the date and time.

Note that the options listed below are for options that can directly be changed within the Main Setup screen.



BIOS Information

It displays BIOS related information.

Memory Information

This displays the total memory size.

System Language

Choose the system default language.

System Date

Adjust the system date.

MM (Months): DD (Days): YYYY (Years)

System Time

Adjust the system clock.

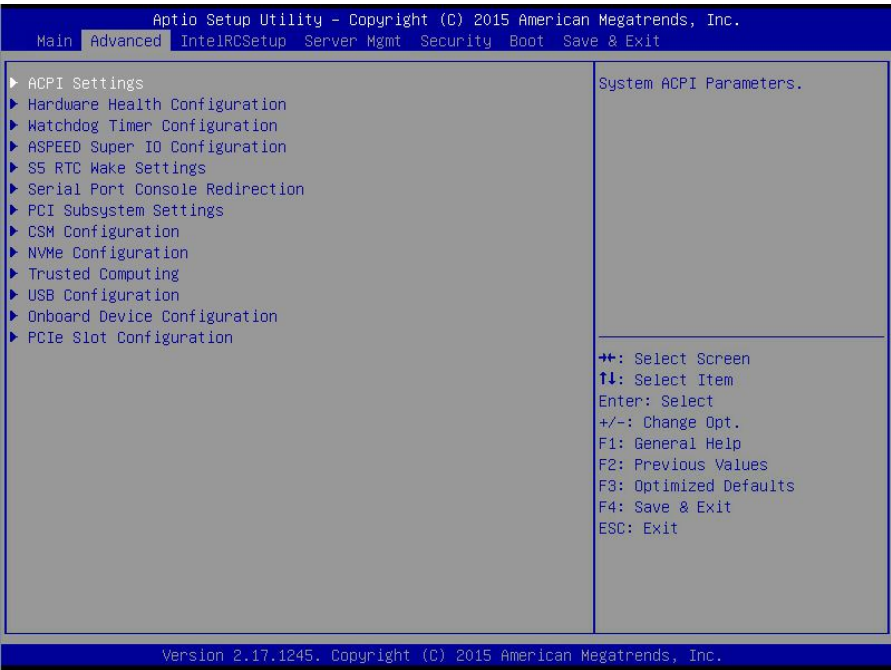
HH (24 hours format): MM (Minutes): SS (Seconds)

Access Level

Read only.

5.3 Advanced Menu

This section facilitates configuring advanced BIOS options for your system.



ACPI Settings

System ACPI Parameters.

Hardware Health Configuration

Hardware health Configuration Parameters.

WatchDog Timer Configuration

WatchDog Configuration

ASPEED Super IO Configuration

System Super IO Chip parameters

S5 RTC Wake Settings

S5 RTC Wake Settings

Serial Port Console Redirection

Serial Port Console Redirection.

PCI Subsystem Settings

PCI, PCI-X and PCI Express Settings

CSM Configuration

CSM Configuration, Enable/Disable Option ROM execution setting,etc

NVMe Configuration

NVMe Configuration

Trusted Computing

Trusted Computing Settings.

USB Configuration

USB Configuration Parameters.

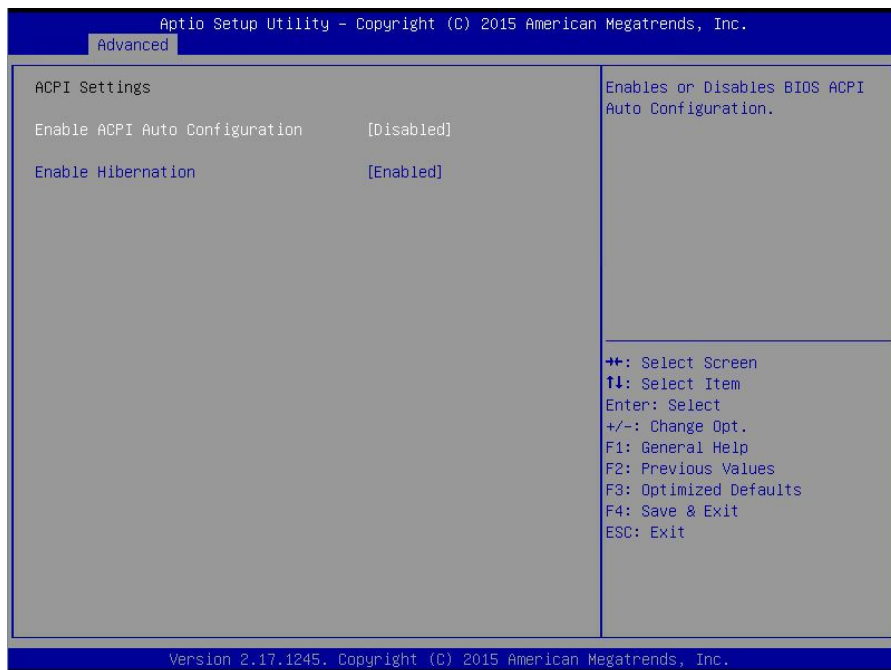
Onboard Device Configuration

Onboard Device Configuration.

PCIe Slot Configuration

PCIe Slot Configuration.

5.3.1 ACPI Settings



Enable ACPI Auto Configuration

Enable or disable BIOS ACPI Auto Configuration.

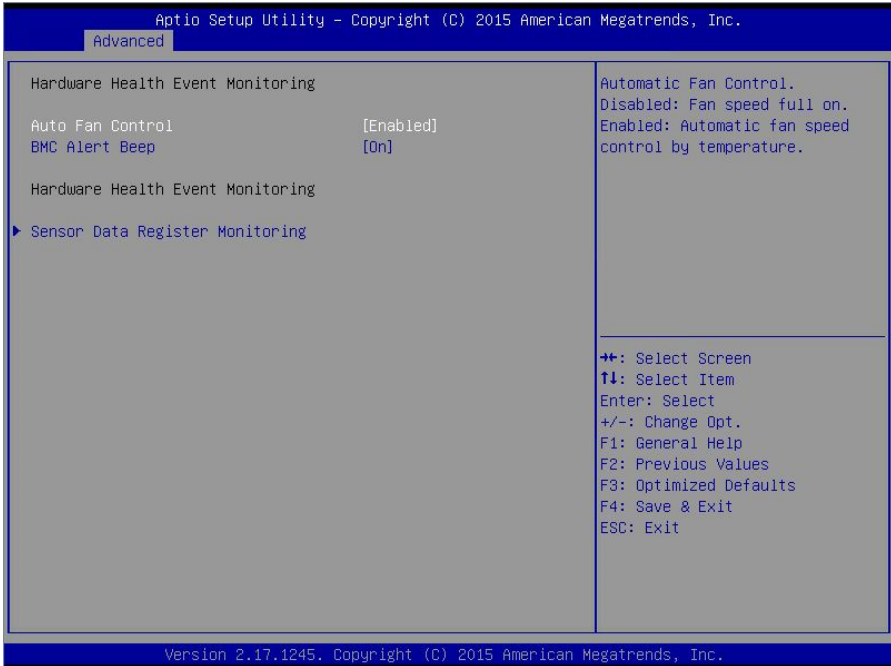
Disabled / Enabled

Enable Hibernation

Enable or disable System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some OS.

Disabled / **Enabled**

5.3.2 Hardware Health Configuration



Auto Fan Control

Select [Disabled] to allow the fan speed running FULL ON.

Enabled / Disabled

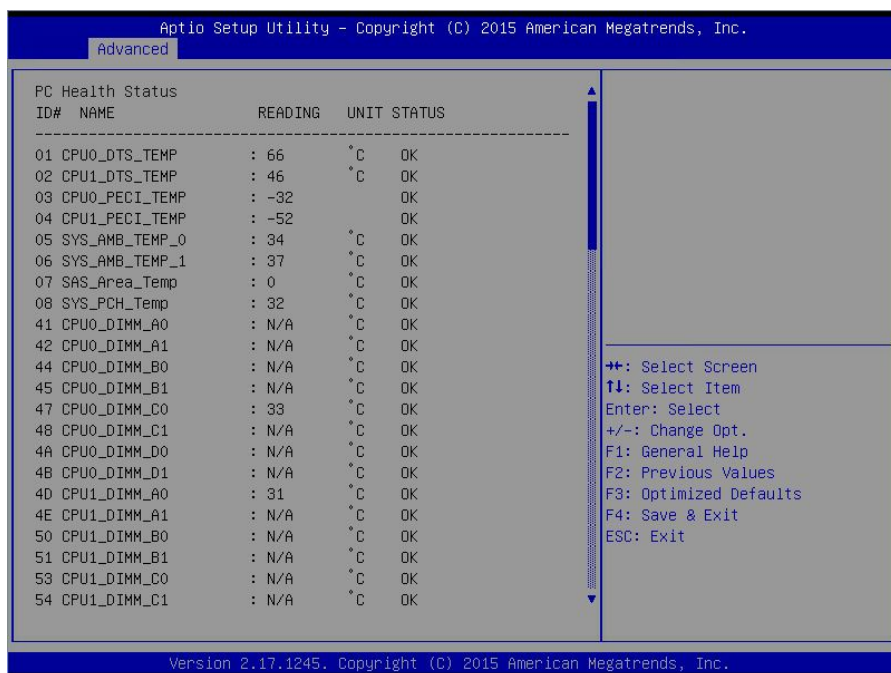
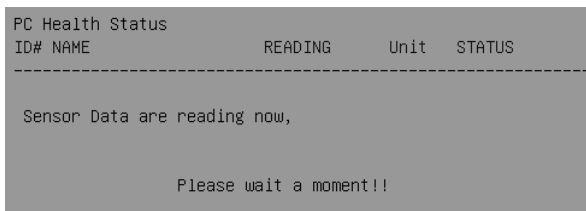
BMC Alert Beep

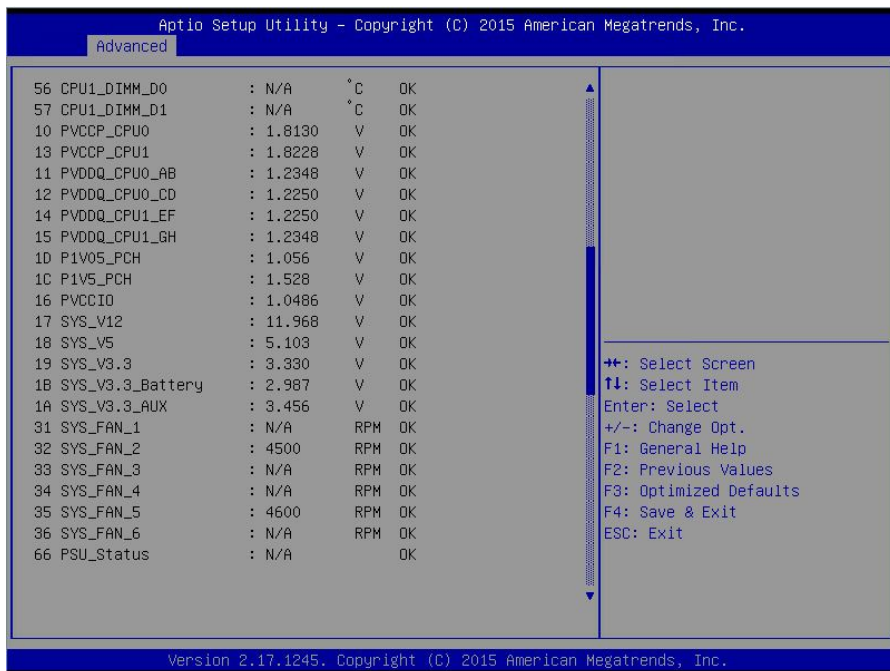
BMC Alert Beep On/Off.

On / Off

5.3.2.1 Sensor Data Register Monitoring

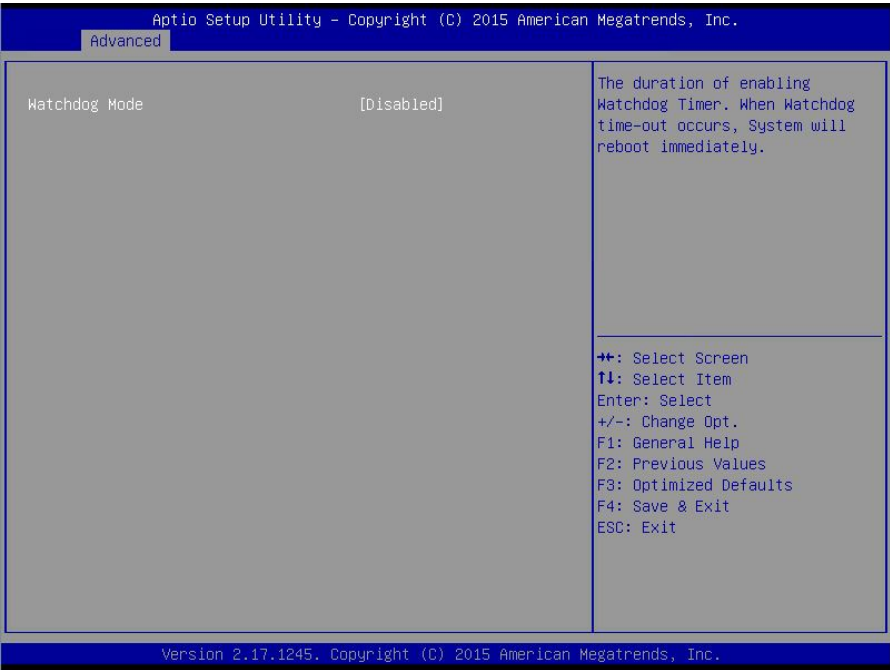
When you enter the **Sensor Data Register Monitoring** submenu, you will see the following dialog window pop out. Please wait 8~10 seconds.





NOTE: SDR can not be modified. Read only.

5.3.3 Watchdog Timer Configuration



Watch Dog Mode

The duration of enabling Watchdog timer. When Watchdog time-out occurs, System will reboot immediately.

Disabled / POST / OS / PowerON

5.3.4 ASPEED Super IO Configuration



Super IO Chip

Read only.

5.3.4.1 Serial Port 1/2 Configuration

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.	
Advanced	
Serial Port 1 Configuration	Enable or Disable Serial Port (COM)
Serial Port [Enabled]	
Device Settings IO=3F8h; IRQ=4;	
Change Settings [Auto]	
 ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.	

Serial Port

Enable or disable Serial Port (COM).

Enabled / Disabled

Device Settings

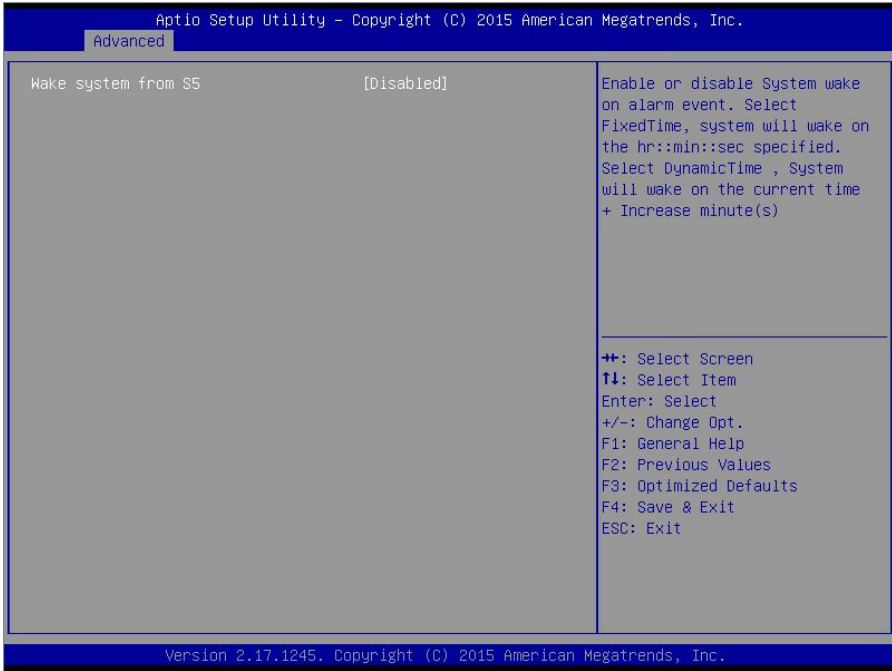
Read only.

Change Settings

Select an optimal setting for Super IO Device.

Auto / IO=3F8h; IRQ=4;
/ IO=3F8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=3E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;
/ IO=2E8h, IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

5.3.5 S5 RTC Wake Settings



Wake from S5

Enable or disable System wake on alarm event. Select Fixed Time, system will wake on the hr:min:sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

Disabled / Fixed Time / Dynamic Time

NOTE: When **Wake from S5** is not set to [Disabled], the following items will appear.

Wake up hour

Select 0-23. For Example enter 3 for 3am and 15 for 3pm.

0~23

Wake up minute

Select 0-59.

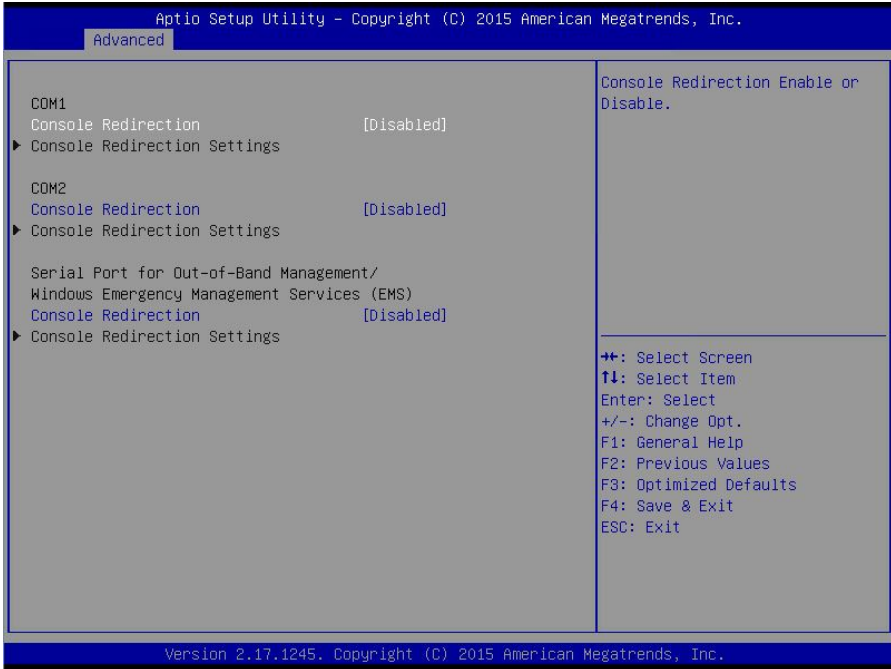
0~59

Wake up second

Select 0-59.

0~59

5.3.6 Serial Port Console Redirection



Console Redirection

Console redirection enable or disable.

Disabled / Enabled

Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS)

Console Redirection

Console redirection enable or disable.

Disabled / Enabled

Console Redirection Settings

The settings specify how the host computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

NOTE: Console Redirection Settings submenu appears when Console Redirection is set to [Enabled].

5.3.6.1 COM1/COM2 Console Redirection Settings

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.	
Advanced	
COM1	
Console Redirection Settings	
Terminal Type	[VT100+]
Bits per second	[38400]
Data Bits	[8]
Parity	[None]
Stop Bits	[1]
Flow Control	[None]
VT-UTF8 Combo Key Support	[Enabled]
Recorder Mode	[Disabled]
Resolution 100x31	[Disabled]
Legacy OS Redirection Resolution	[80x24]
Putty KeyPad	[VT100]
Redirection After BIOS POST	[Always Enable]
Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	

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Terminal Type

Emulation: ANSI: Extended ASCII charset.

VT100: ASCII charset.

VT100+: Extends VT100 to support color function keys, etc.

VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

VT100+ / ANSI / VT-UTF8 / VT100

Bits per Second

Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

38400 / 9600 / 19200 / 115200 / 57600

Data Bits

8 / 7

Parity

A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if the num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: parity bit is always 0. Mark and Space parity do not allow for error detection.

None / Even / Odd / Mark / Space

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

1 / 2

Flow Control

Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS

VT-UTF8 Combo Key Support

Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

Enabled / Disabled

Recorder Mode

With this mode enabled only text will be sent. This is to capture Terminal data.

Disabled / Enabled

Resolution 100x31

Enable or disable extended terminal resolution.

Disabled / Enabled

Legacy OS Redirection Resolution

On Legacy OS, the number of rows and columns supported redirection.

80x24 / 80x25

Putty KeyPad

Select FunctionKey and KeyPad on Putty.

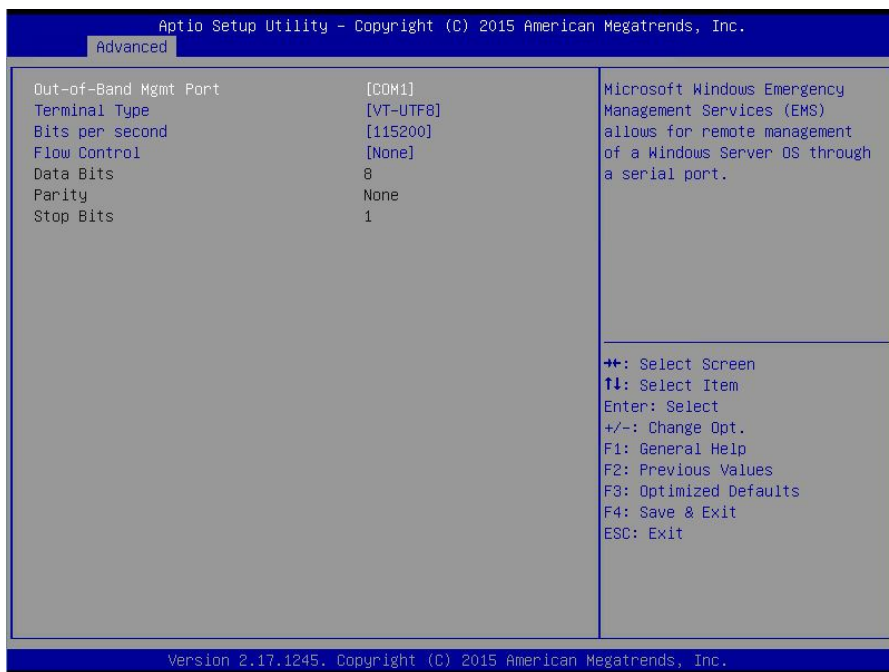
VT100 / LINUX / XTERMR6 / SCO / ESCN / VT400

Redirection After BIOS POST

The settings specify if bootloader is selected than Legacy console redirection is disabled before booting to Legacy OS. Default value is always enable means Legacy.

Always Enable / Bootloader

5.3.6.2 Serial Port for Out-Of-Band Management/Windows Emergency Services (EMS) Console Redirection Settings



Out-of Band Mgmt Port

Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

COM1 / COM2

Terminal Type

VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.

VT-UTF8 / VT100 / VT100+ / ANSI

Bits per Second

Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

115200 / 9600 / 19200 / 38400 / 57600

Flow Control

Flow Control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to restart the flow. Hardware flow control uses two wires to send start/stop signal.

None / Hardware RTS/CTS

Data Bits / Parity / Stop Bits

Read only.

5.3.7 PCI Subsystem Settings



Above 4G Decoding

Enables or Disables 64bit capable Devices to be Decoded in Above 4G Address Space (Only if System Supports 64 bit PCI Decoding).

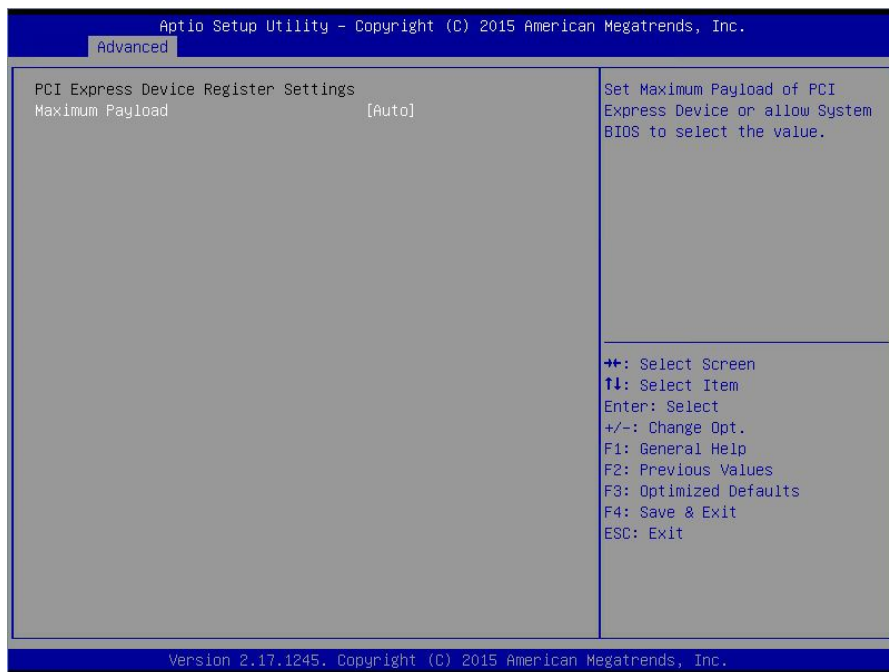
Disabled / Enabled

SR-IOV Supporting

If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

Enable / **Disabled**

3.3.7.1 PCI Express Settings

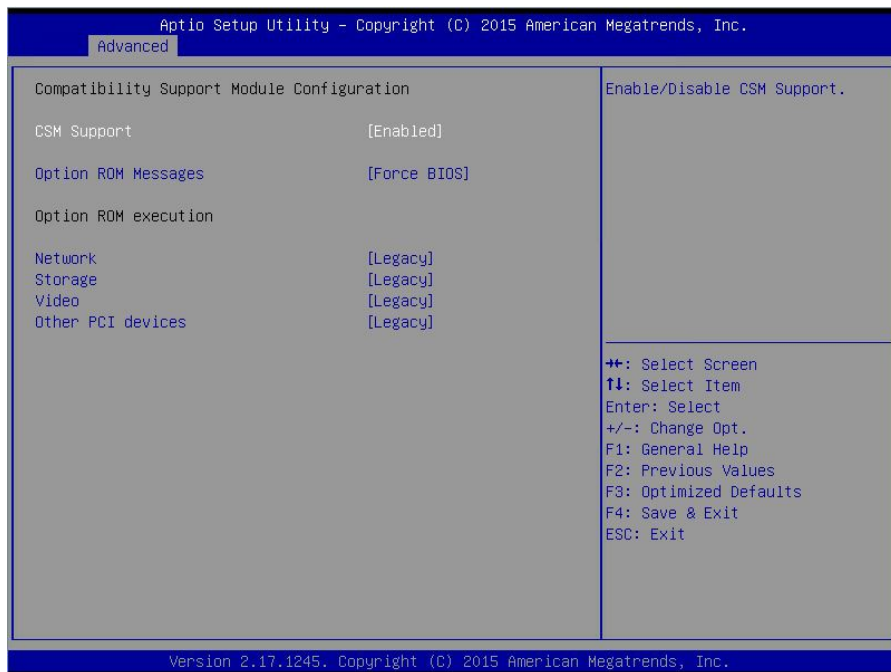


Maximum Payload

Set maximum payload of PCI express device or allow system BIOS to select the value.

Auto / 128 Bytes / 256 Bytes

3.3.8 CSM Configuration



CSM support

Enable/Disable CSM Support

Enabled / Disabled

Option ROM Messages

Set display mode for Option ROM

Force BIOS / Keep Current

Network

Controls the execution of UEFI and legacy PXE OpROM

Do not launch / UEFI / **Legacy**

Storage

Controls the execution of UEFI and legacy PXE OpROM

Do not launch / UEFI / **Legacy**

Video

Controls the execution of UEFI and legacy PXE OpROM

Do not launch / UEFI / **Legacy**

Other PCI devices

Determines OpRom execution policy for devices other than network, storage, or video

Do not launch / UEFI / **Legacy**

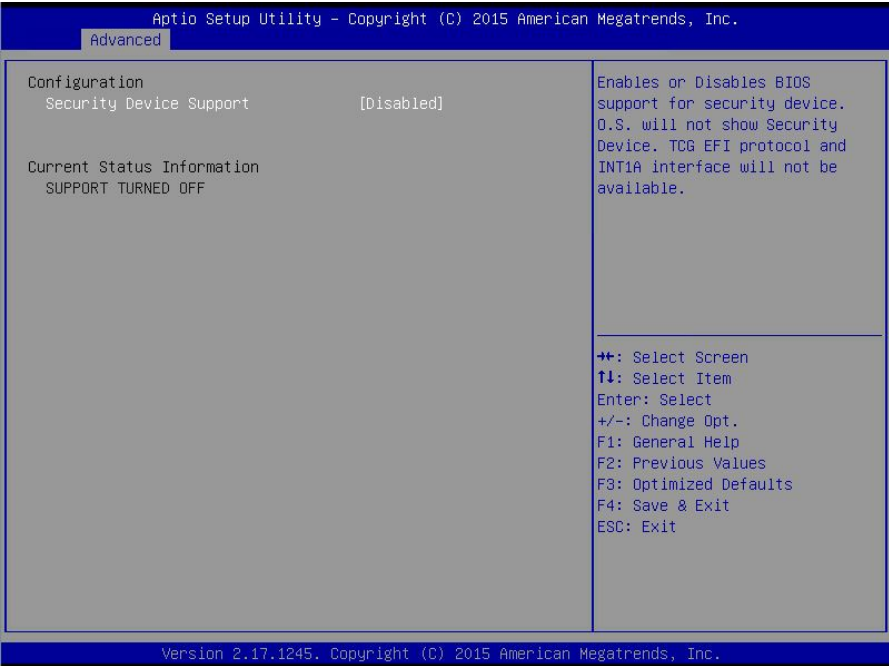
3.3.9 NVMe Configuration



NVMe controller and Drive information

Read only.

5.3.10 Trusted Computing

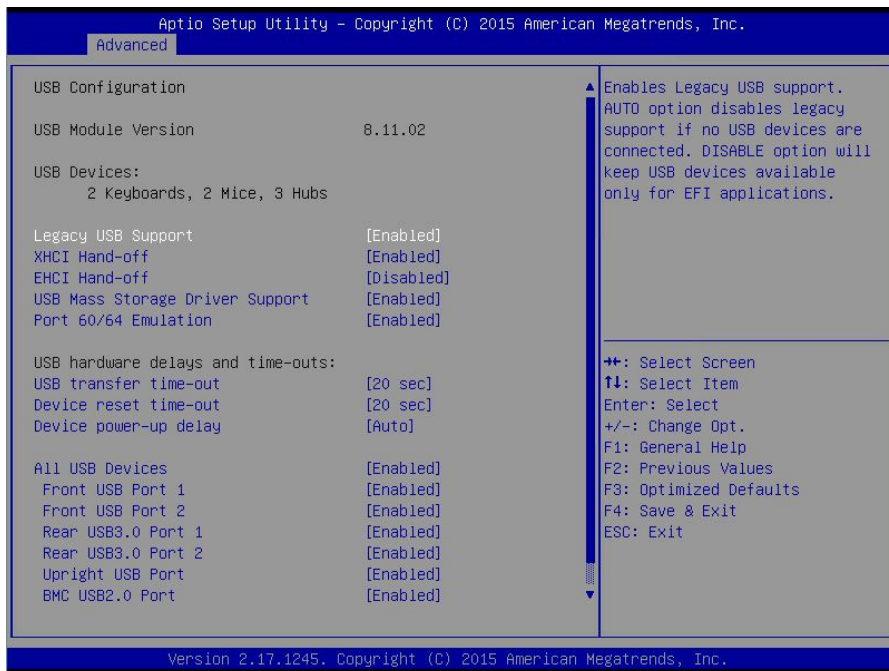


Security Device Support

Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

Disabled / Enabled

5.3.11 USB Configuration



Legacy USB Support

Enable USB legacy support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.

Enabled / Disabled / Auto

XHCI Hand-off

This is a workaround for OSES without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

Enabled / Disabled

EHCI Hand-off

This is a workaround for OSES without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

Disabled / Enabled

USB Mass Storage Driver Support

Enable / Disable USB Mass Storage Driver Support.

Enabled / Disabled

Port 60/64 Emulation

Enables I/O port 60h/64h emulation support. This should be enabled for the complete USB keyboard legacy support for non-USB aware OSes.

Enabled / Disabled

USB transfer time-out

The time-out value for Control, Bulk and Interrupt transfers.

20 sec / 10 sec / 5 sec / 1 sec

Device reset time-out

USB mass storage device Start Unit command time-out.

20 sec / 10 sec / 30 sec / 40 sec

Device power-up delay

Maximum time the device will take before it properly reports itself to the Host Controller. AUTO uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor.

Auto / Manual

All USB Devices

Disable all The USB Ports.

Enabled / Disabled

Front USB Port 1

Front USB Port 1 Enable / Disable.

Enabled / Disabled

Front USB Port 2

Front USB Port 2 Enable / Disable.

Enabled / Disabled

Rear USB3.0 Port 1

Rear USB3.0 Port 1 Enable / Disable.

Enabled / Disabled

Rear USB3.0 Port 2

Rear USB3.0 Port 2 Enable / Disable

Enabled / Disabled

Upright USB Port

Upright USB Port Enable Disable.

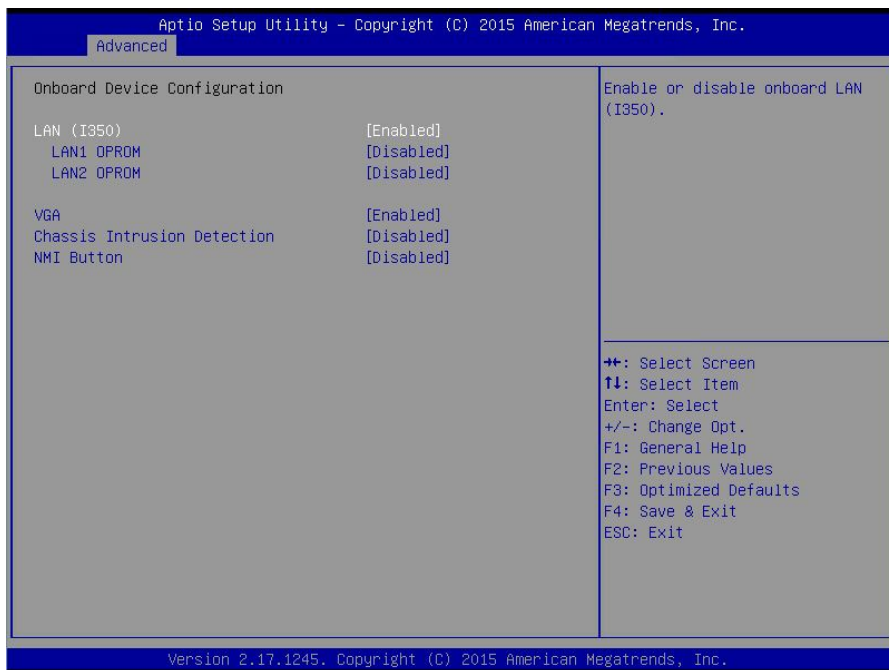
Enabled / Disabled

BMC USB2.0 Port

BMC USB2.0 Port Enable / Disable.

Enabled / Disabled

5.3.12 Onboard Device Configuration



LAN (I350)

Enable or disable onboard LAN (I350).

Enabled / Disabled

LAN1 OPROM

Enable or disable onboard LAN OPROM.

Disabled / PXE / iSCSI

LAN2 OPROM

Enable or disable onboard LAN OPROM.

Disabled / PXE

VGA

Enable or disable onboard VGA.

Enabled / Disabled

Chassis Intrusion Detection

Enabled: when a chassis open event is detected, the BIOS will display the event.

Disabled / Enabled

NMI Button

Enable or Disable NMI button.

Disabled / Enabled

5.3.13 PCIe Slot Configuration

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.	
Advanced	
PCIe Slot Option ROM Setting	Enable or disable PCIe Slot OPROM.
HBA Mezzanine Slot OPROM [Enabled]	
OCF Mezzanine Slot OPROM [Enabled]	
PCIe Slot1 OPROM [Enabled]	
PCIe Slot2 OPROM [Enabled]	
PCIe Slot Link Speed Configuration	
HBA Mezzanine Slot Link Speed [Auto]	
OCF Mezzanine Slot Link Speed [Auto]	
PCIe Slot1 Link Speed [Auto]	
PCIe Slot2 Link Speed [Auto]	
Non-Transparent Bridge PCIe Port Definition	
CPU0 Port 3A Non-Transparent Bridg [Transparent Bridge]	
CPU1 Port 3A Non-Transparent Bridg [Transparent Bridge]	
	→+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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HBA Mezzanine Slot OPROM

Enable or disable PCIe slot OPROM.

Enabled / Disabled

OCF Mezzanine Slot OPROM

Enable or disable PCIe slot OPROM.

Enabled / Disabled

PCIe Slot1/2 OPROM

Enable or disable PCIe slot OPROM.

Enabled / Disabled

HBA Mezzanine Slot Link Speed

Onboard PCIe Slot Link Speed Configuration.

Auto / Gen 1 (2.5GT/s) / Gen 2 (5GT/s) / Gen 3 (8GT/s)

OCF Mezzanine Slot Link Speed

Onboard PCIe Slot Link Speed Configuration.

Auto / Gen 1 (2.5GT/s) / Gen 2 (5GT/s) / Gen 3 (8GT/s)

PCIe Slot1/2 Link Speed

Onboard PCIe Slot Link Speed Configuration.

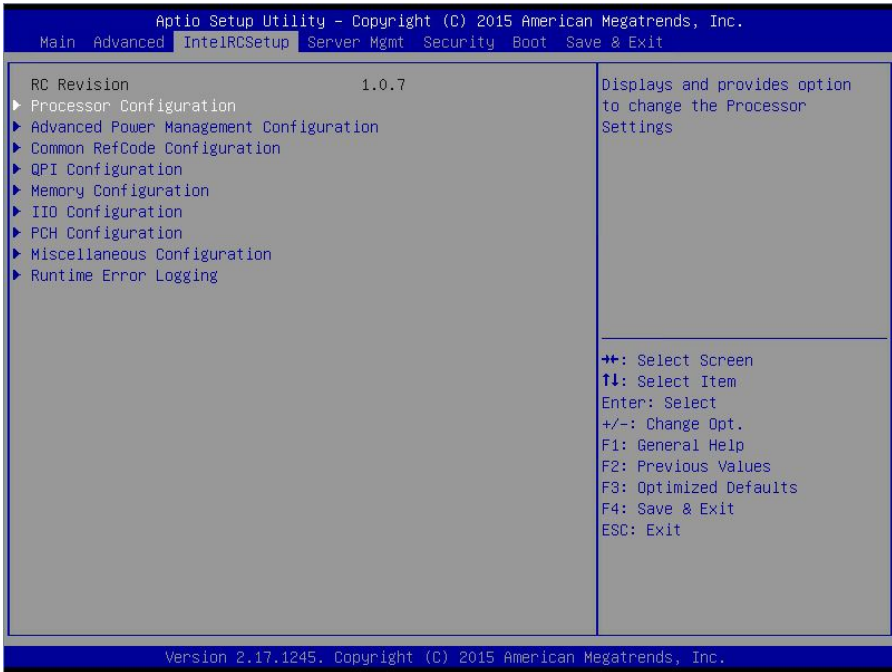
Auto / Gen 1 (2.5GT/s) / Gen 2 (5GT/s) / Gen 3 (8GT/s)

CPU0/1 Port 3A Non-Transparent Bridg

Configures port as TB, NTB-NTB, or NTB-RP.

Transparent Bridge / NTB to NTB / NTB to RP

5.4 Intel RCSetup Menu



Processor Configuration

Processor Parameters.

Advanced Power Management Configuration

Advanced power management Parameters.

Common RefCode Configuration

Common RefCode Configuration.

QPI Configuration

QPI Configuration

Memory Configuration

Memory Configuration

IIO Configuration

IIO Configuration

PCH Configuration

PCH Configuration

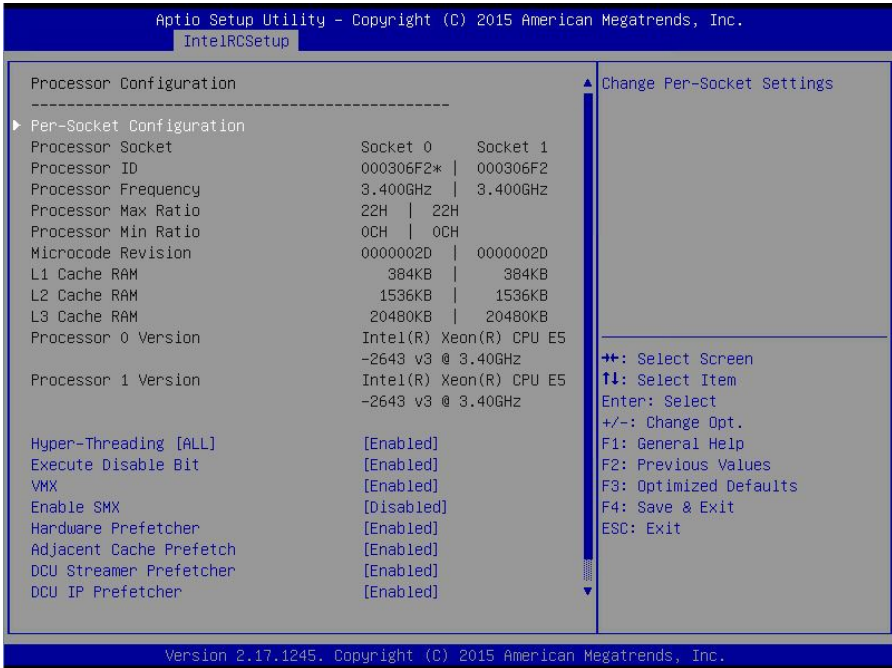
Miscellaneous Configuration

Miscellaneous Configuration

Runtime Error Configuration

Runtime Error Configuration

5.4.1 Processor Configuration



Hyper Threading (ALL)

Enabled for Windows XP and Linux (OS optimized for Hyper Threading Technology) and disabled for other OS (OS not optimized for Hyper Threading Technology).
When disabled only one thread

Enabled / Disabled

Execute Disable Bit

XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

Enabled / Disabled

VMX

Enables the vanderpool Technology, takes effect after reboot.

Enabled / Disabled

Enable SMX

Enables Safer Mode Extensions.

Enabled / **Disabled**

Hardware Prefetcher

=MLC Streamer Prefetcher (MSR1A4H Bit[0])

Enabled / Disabled

Adjacent Cache Prefetch

=MLC Spatial Prefetcher (MSR1A4h Bit[1])

Enabled / Disabled

DCU Streamer Prefetcher

DCU streamer prefetcher is an L1 data cache prefetcher (MSR 1A4h [2]).

Enabled / Disabled

DCU IP Prefetcher

DCU IP prefetcher is an L1 data cache prefetcher (MSR 1A4h [3]).

Enabled / Disabled

Direct Cache Access (DCA)

Enables Direct Cache Access.

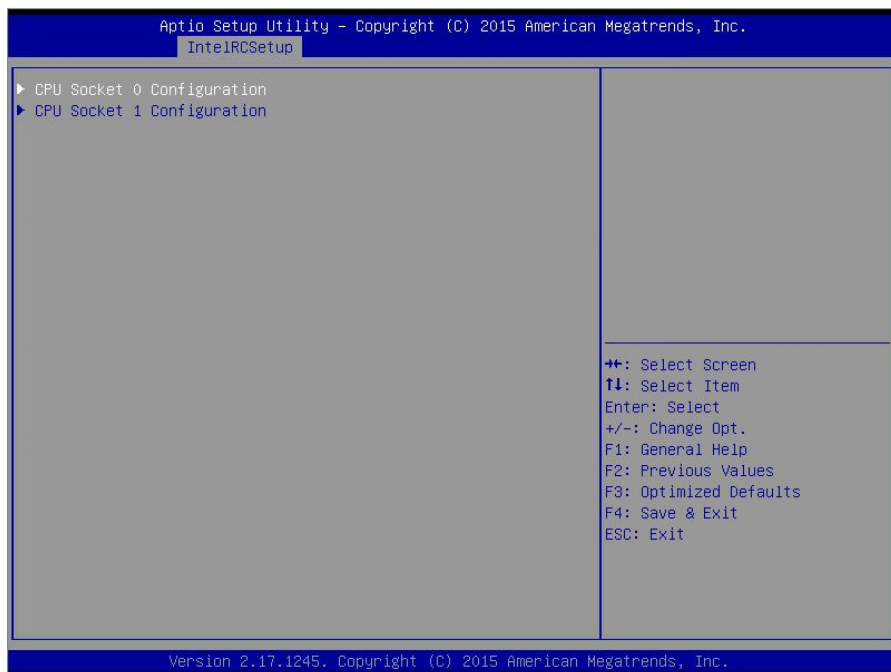
Auto / Disabled / Enabled

AES-NI

Enable / disable AES-NI support.

Enabled / Disabled

5.4.1.1 Per Socket Configuration



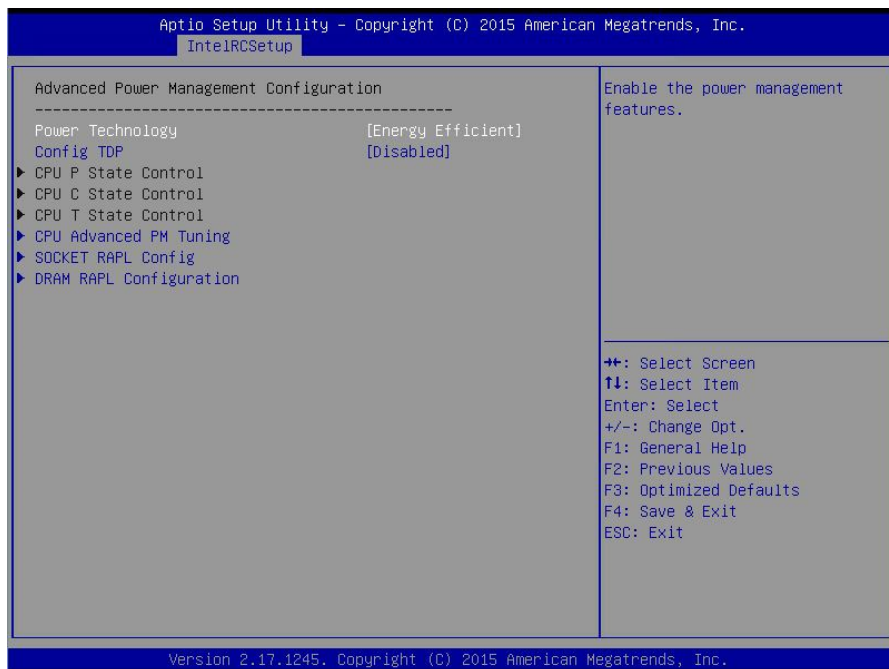
5.4.1.1.1 CPU Socket 0 / 1 Configuration

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.	
IntelRCSetup	
CPU Socket 0 Configuration ----- Cores Enabled 0	Number of Cores to Enable. 0 means all cores. 6 Cores available. ↑↓: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.	

Cores Enabled

Number of Cores to Enable. 0 means all cores. 6 cores available.

5.4.2 Advanced Power Management Configuration



Power Technology

Enable the power management features.

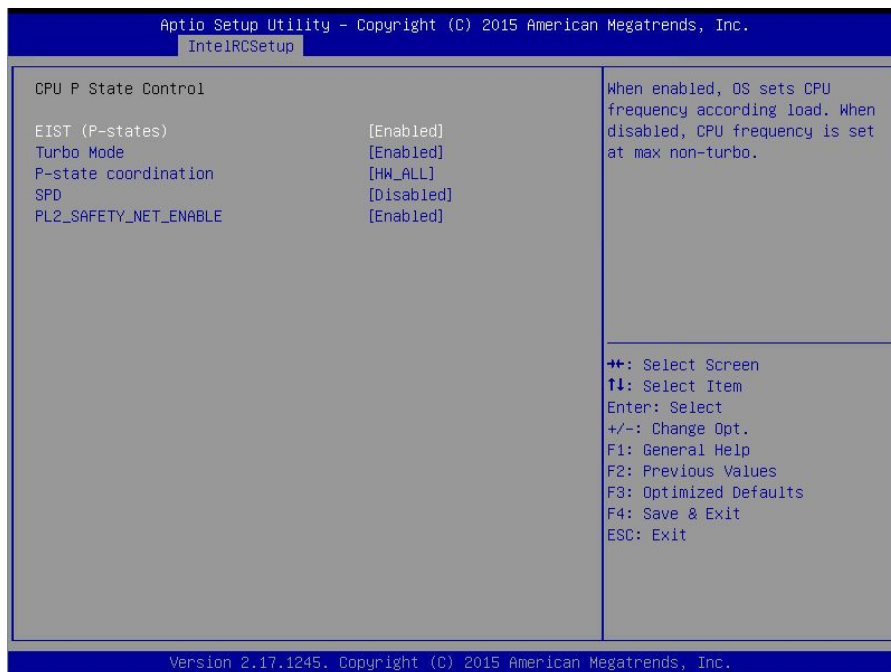
Custom / Disabled / **Energy Efficient**

Config TDP

Option to disable/enable Config TDP.

Disabled / Enabled

5.4.2.1 CPU P State Control



EIST (P-States)

When enabled, OS sets CPU frequency according load, when disabled, CPU frequency is set at max non-turbo.

Enabled / Disabled

Turbo Mode

Turbo mode allows a CPU logical processor to execute a higher frequency when enough power is available not exceed CPU defined limits.

Enabled / Disabled

P-STATE Coordination

HW_ALL (hardware) coordination is recommended over SW_ALL and SW_ANY (software coordination).

SW_ALL / **HW_ALL** / SW_ANY

SPD

PCU_MISC_CONFIG Bit [30] : SPD

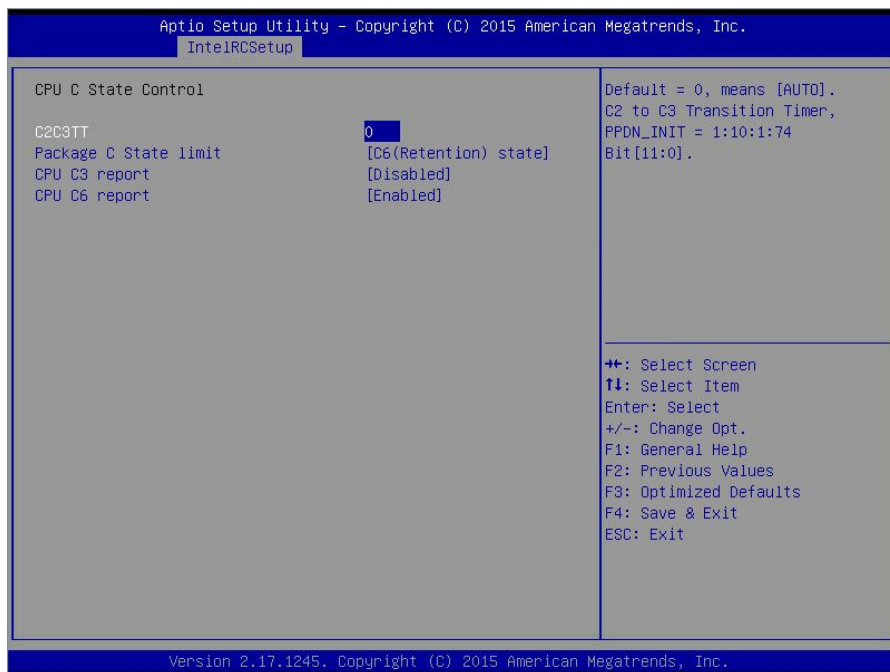
Disabled / Enabled

PL2_SAFETY_NET_ENABLE

PCU_MISC_CONFIG Bit [1] : PL2_SAFETY_NET_ENABLE.

Enabled / Disabled

5.4.2.2 CPU C State Control



C2C3TT

Default=0, means [Auto]. C2 to C3 Transition Timer, PPDN_INIT=1:10:1:74 Bit [11:0].

Package C State Limit

Package C State limit.

C0/C1 state / C2 state / C6 (non Retention) state / **C6 (Retention) state**

CPU C3 Report

Enable/Disable CPU C3 (ACPI C2) report to OS. Recommended to be disabled.

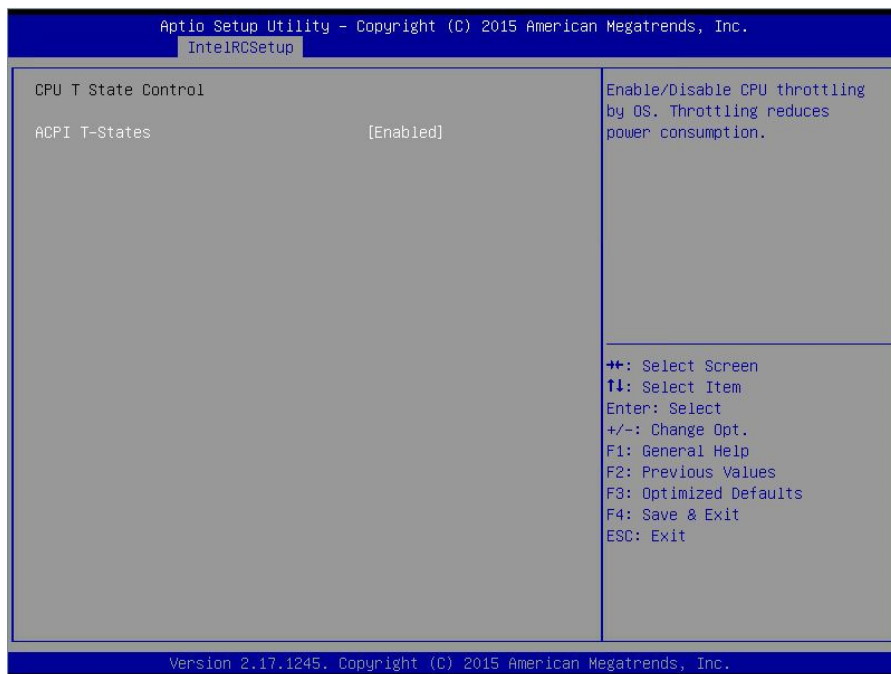
Disabled / Enabled

CPU C6 Report

Enable/Disable CPU C6 (ACPI C2) report to OS. Recommended to be enabled.

Enabled / Disabled

5.4.2.3 CPU T State Control



ACPI T-States

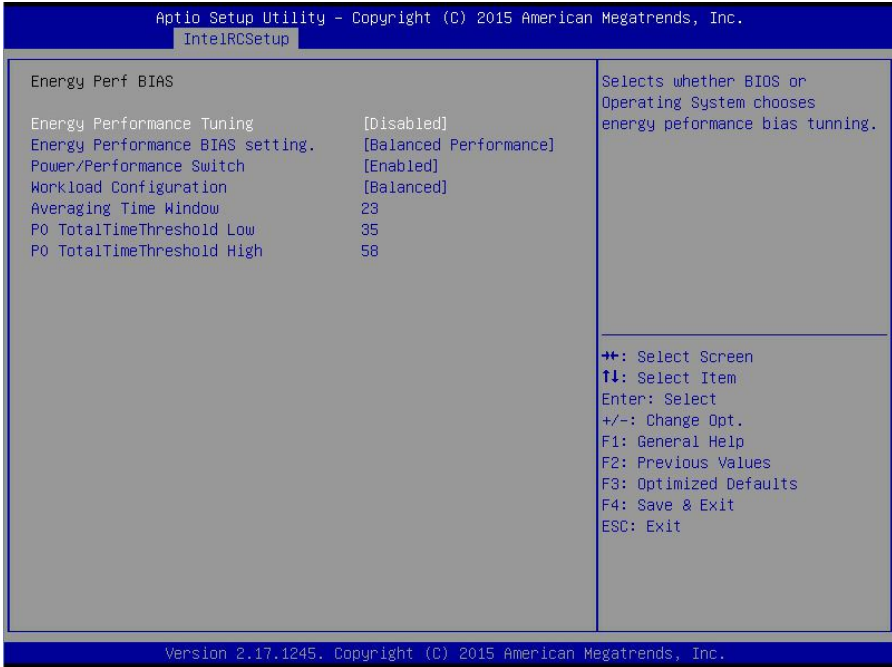
Enable/Disable CPU throttling by OS. Throttling reduces power consumption.

Enabled / Disabled

5.4.2.4 CPU Advanced PM Turning



5.4.2.4.1 Energy Performance BIAS



Energy Performance Tuning

Selects whether BIOS or Operating System chooses energy performance bias tuning.

Enabled / **Disabled**

Energy Performance Tuning

Set Energy Performance BIAS, which overrides OS setting.

Performance / **Balanced Performance** / Balanced power / Power

Power/Performance Switch

MSR 1Fch Bit[24]= PWR_PERF_TUNING_ENABLE_DYN_SWITCHING

Enabled / Disabled

Workload Configuration

Optimization for the workload characterization. Balanced is recommended.

I/O sensitive / **Balanced**

Averaging Time Window

This is used to control the effective window of the average for C0 and P0 time.

23

P0 TotalTimeThreshold Low

The HW switching mechanism DIABLES the performance setting (0) when the total P0 time is less than this threshold.

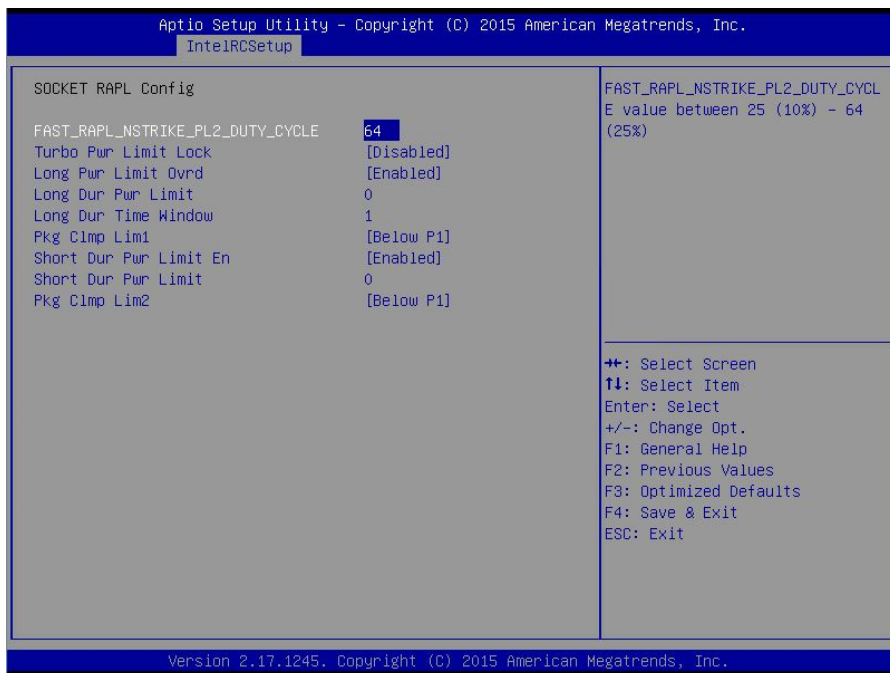
35

P0 TotalTimeThreshold High

The HW switching mechanism DIABLES the performance setting (0) when the total P0 time is greater than this threshold.

58

5.4.2.5 SOCKET RAPL Config



FAST_RAPL_NSTRIKE_PL2_DUTY_CYCLE

FAST_RAPL_NSTRIKE_PL2_DUTY_CYCLE value between 25 (10%) – 64 (25%)

64

Turbo Pwr Limit Lock

Enable/Disable locking of turbo settings. When enabled, TURBO_POWER_LIMIT MSR will be locked and a reset will be required to unlock the register.

Disabled / Enabled

Long Pwr Limit ovrd

Enable/disable Long Term power Limit override. If this option is disabled, BIOS will program the default values for Long Term Power Limit and Long Term Power Limit Time Window.

Enabled / Disabled

Long Dur Pwr Limit

Turbo Mode Long Duration Power Limit (aka Power Limit 1) in Watts. The value may vary from 0 to Fused Value. If the value is 0, the fused value will be programmed. A value greater than fused TDP value will not be programmed.

0

Long Dur Time Window

Long Duration Time Window (aka Power Limit 1 Time) value in seconds. The value may vary from 0 to 56. Indicates the time window over which TDP value should be maintained. If the value is 0, the fused value will be programmed.

1

Pkg Clmp Lim1

Pkg Clamping limit 1, Allow going below P1. 0:PBBM limited between P1 and P0. 1: PBM can go below P1.

Below P1 / Between P1/P0

Short Dur Pwr Limit En

Enable/Disable Short Duration power Limit (aka Power Limit 2).

Enabled / Disabled

Short Dur Pwr Limit

Short Duration Power Limit (aka Power Limit 2) value in Watts. The value may vary from 0 to 32767. If the value is 0, BIOS will program this value as 125% TDP. Processor applies control policies such that the package power does not exceed this limit.

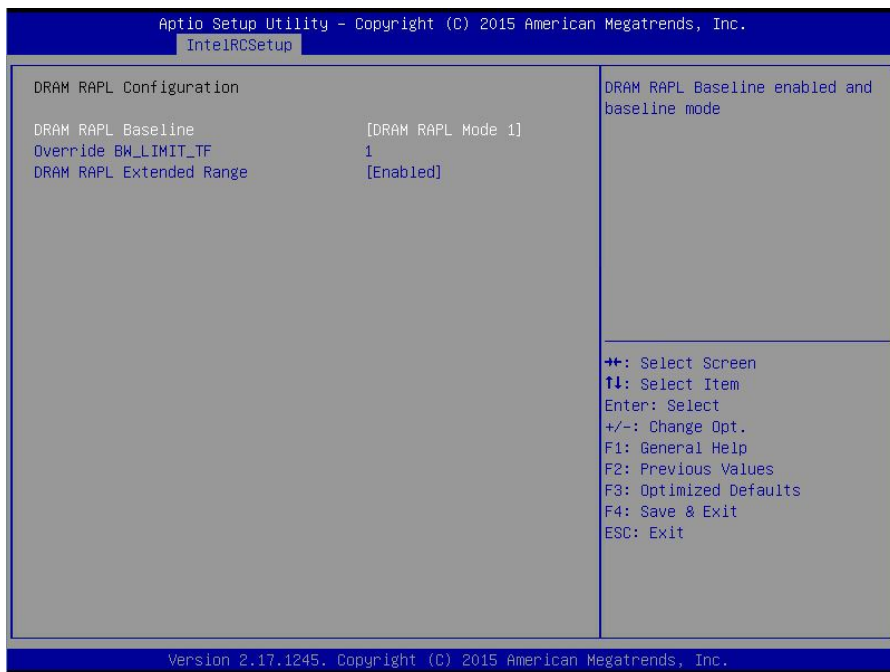
0

Pkg Clmp Lim2

Pkg Clamping limit 2, Allow going below P1. 0:PBBM limited between P1 and P0. 1: PBM can go below P1.

Below P1 / Between P1/P0

5.4.2.6 DRAM RAPL Configuration



DRAM RAPL Baseline

DRAM RAPL Baseline enabled and baseline mode.

DRAM RAPL Mode 1 / DRAM RAPL Mode 0 / Disabled

Override BW_LIMIT_TF

Allows custom tuning of BW_LIMIT_TF when DRAM RAPL is enabled.

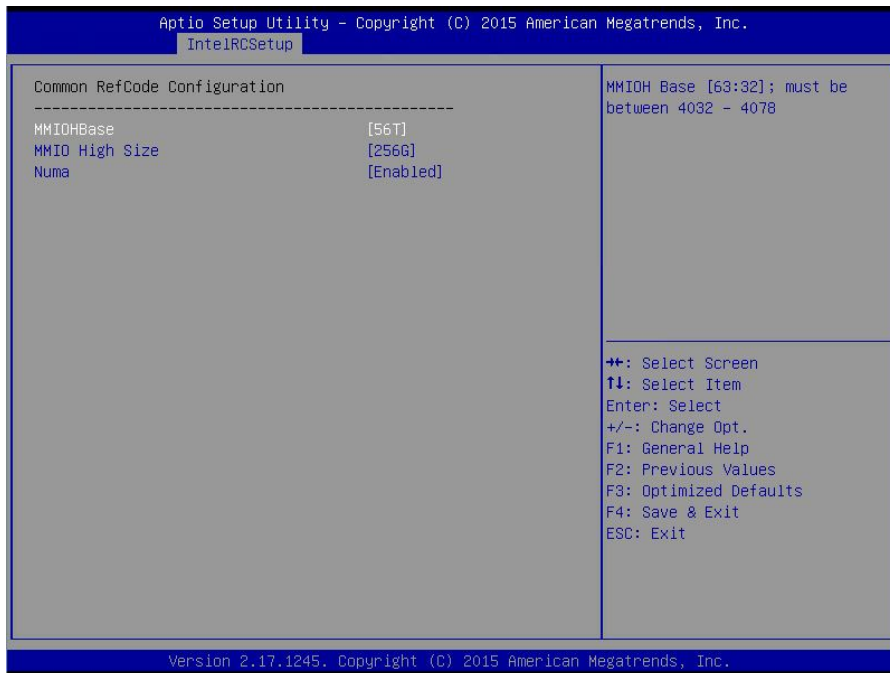
1

DRAM RAPL Extended Range

Select DRAM RAPL Extended Range.

Enabled / Disabled

5.4.3 Common RefCode Configuraion



MMIOH Base

MMIOH Base [63:32]; must be between 4032 – 4078.

56T / 40T / 24T / 16T / 4T

MMIO High Size

Select MMIO High Size

256G / 128G / 512G / 1024G

NUMA

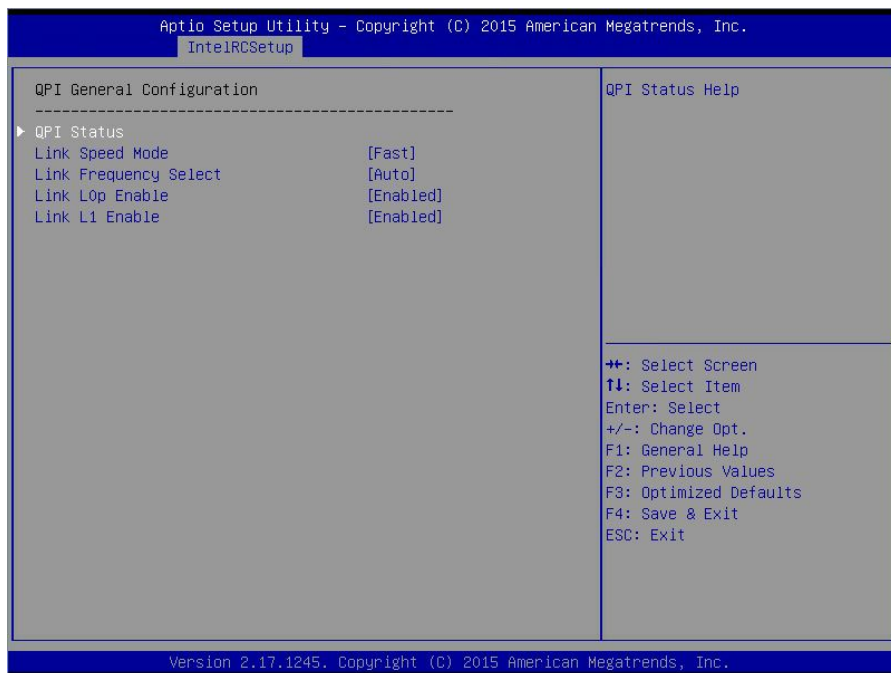
Enable or Disable Non uniform Memory Access (NUMA).

Enabled / Disabled

5.4.4 QPI Configuration Submenu



5.4.4.1 QPI General Configuration



Link Speed Mode

Select the QPI link speed as either the POR speed (Fast) or default speed (Slow).

Fast / Slow

Link Frequency Select

Allows for selecting the QPI Link Frequency.

Auto / 6.4GB/s / 8.0GB/s / 9.6GB/s / Auto Limited

Link L0p Enable

Link L0p Enable: Disable, Enable, Auto (default).

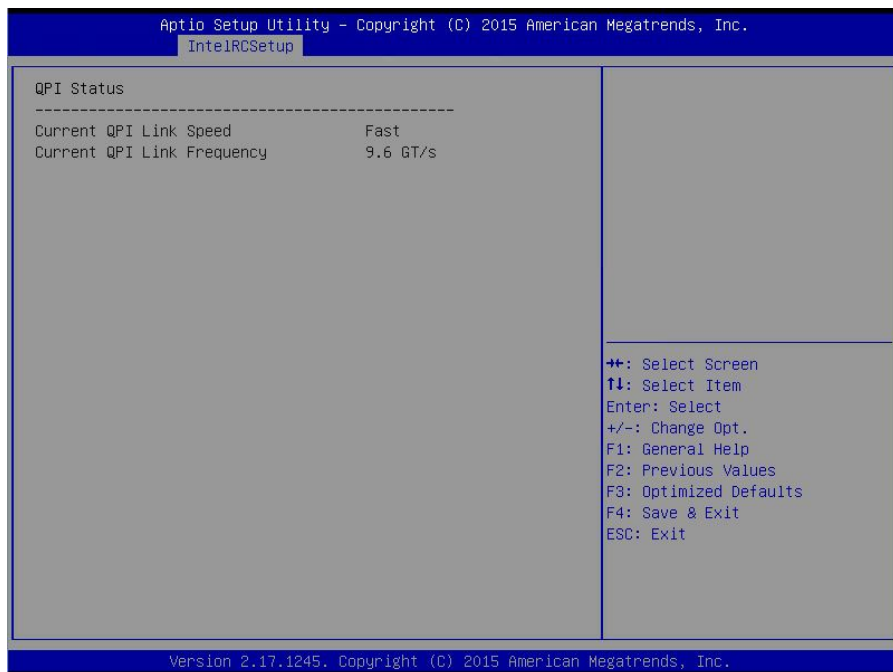
Enabled / Disabled

Link L1 Enable

Link L1 Enable: Disable, Enable, Auto (default).

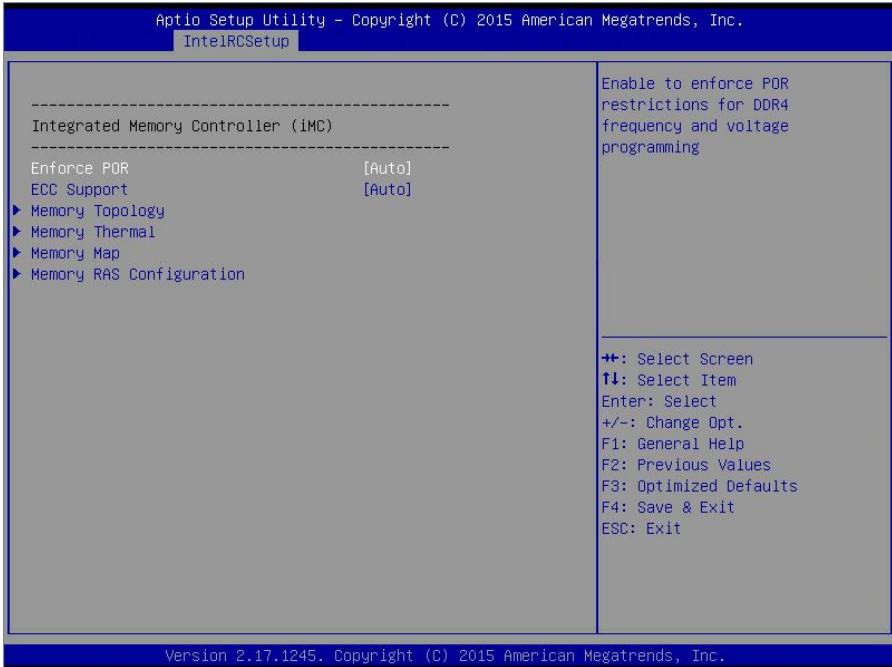
Enabled / Disabled

5.4.4.1.1 QPI Status



Read only.

5.4.5 Memory Configuration



Enforce POR

Enable to enforce POR restrictions for DDR4 frequency and voltage programming.

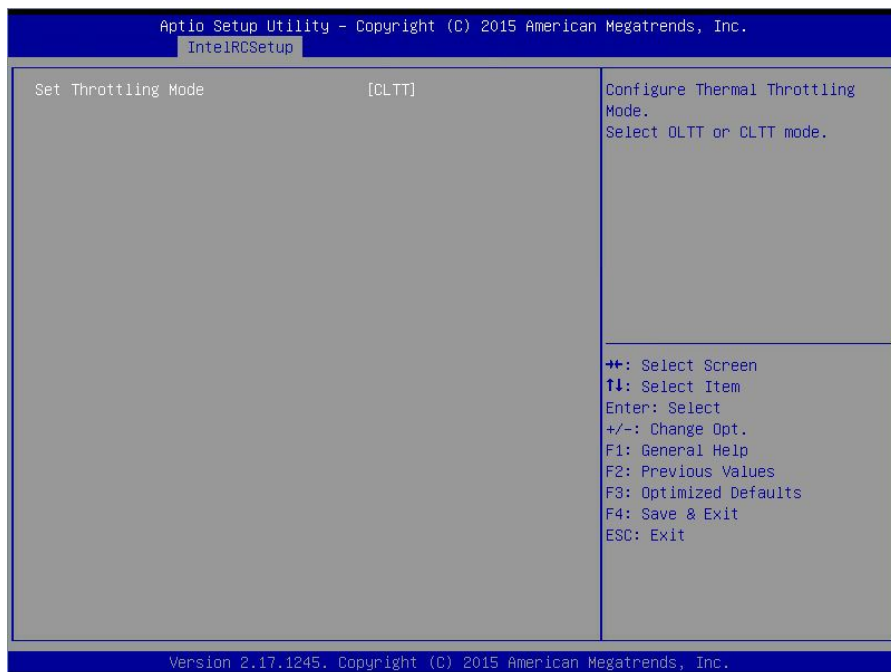
Auto / Disabled

ECC Support

Enable/disable DDR ECC Support.

Auto / Disabled / Enabled

5.4.5.2 Memory Thermal



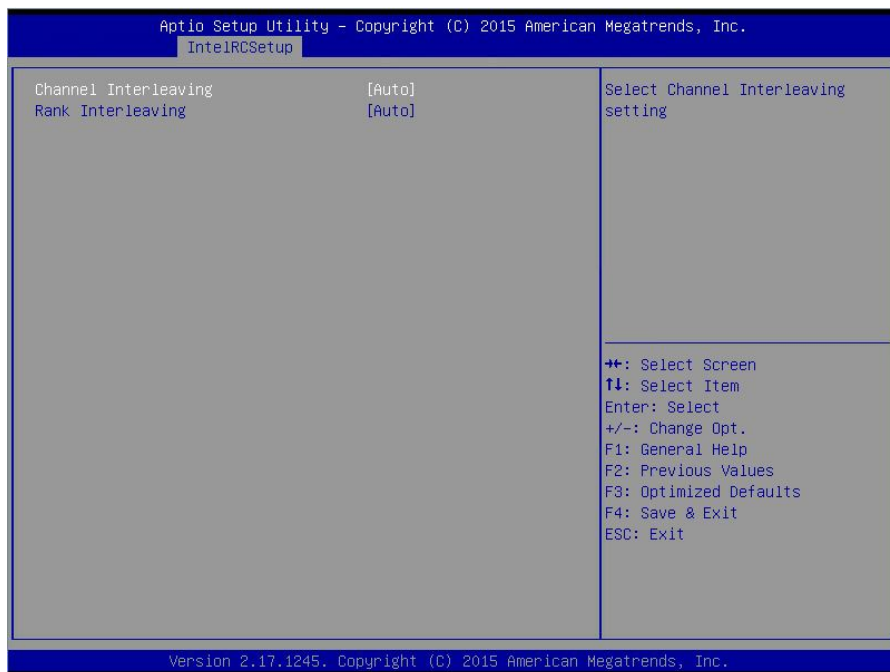
Set Throttling Mode

Configure Thermal Throttling Mode.

Select OLTT or CLTT mode.

CLTT / OLTT / Disabled

5.4.5.3 Memory Map



Channel Interleaving

Select Channel Interleaving setting.

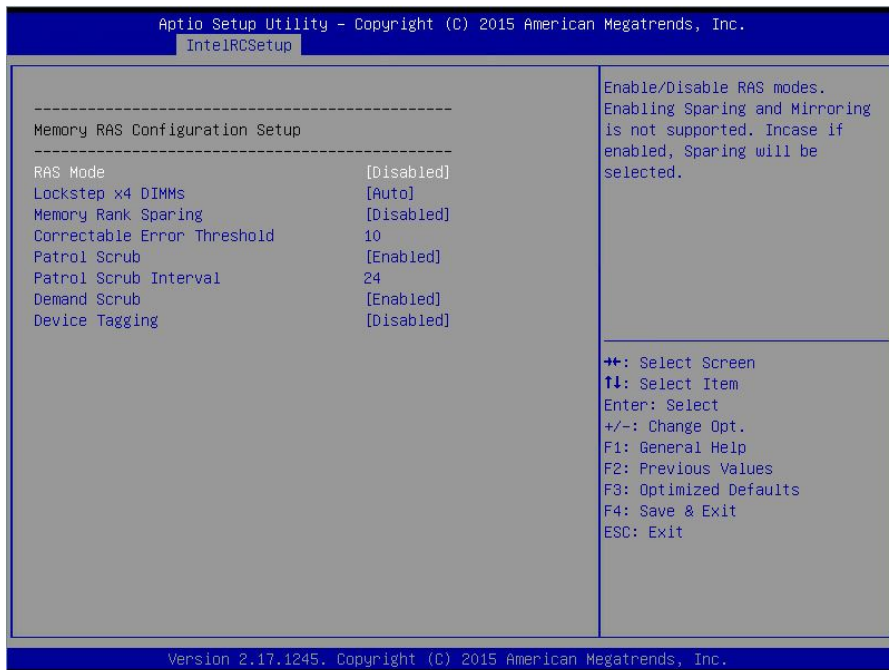
Auto / 1-way Interleave / 2-way Interleave / 3-way Interleave / 4-way Interleave

Rank Interleaving

Select Rank Interleaving setting.

Auto / 1-way Interleave / 2-way Interleave / 4-way Interleave / 8-way Interleave

5.4.5.4 Memory RAS Configuration



RAS Mode

Enable / Disable RAS modes. Enabling Sparing and Mirroring is not supported. Incase if enabled, sparing will be selected.

Disabled / Mirror / Lockstep Mode

Lockstep x4 DIMMs

Enable / Disable Lockstep for x4 DIMMs

Auto / Disabled / Enabled

Memory Rank Sparing

Enable / Disable Memory Rank Sparing

Disabled / Enabled

Correctable Error Threshold

Correctable error threshold (1-32767) used for sparing, tagging, and leaky bucket.

10

Patrol Scrub

Enable/Disable patrol Scrub.

Enabled / Disabled

Patrol Scrub Interval

Selects the number of hours (1-24) required to complete full scrub. A value of zero means auto.

24

Demand Scrub

Enable/Disable Demand Scrub.

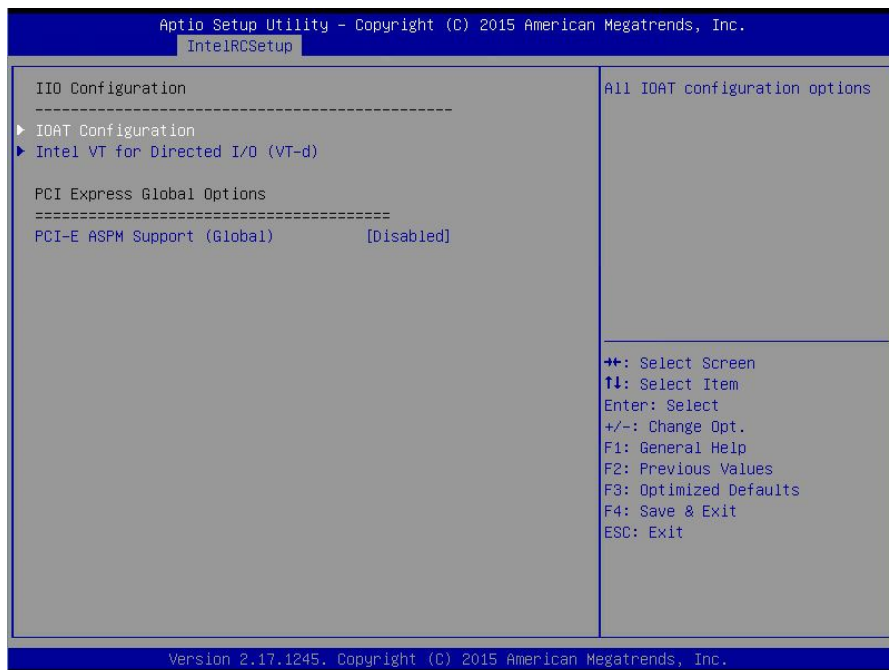
Disabled / **Enabled**

Device Tagging

Enable / Disable Device Tagging

Disabled / Enabled

5.4.6 IIO Configuration Submenu



PCI-E ASPM Support (Global)

This option enables / disables the ASPM support for all downstream devices.

Disabled / L1 Only

5.4.6.1 IOAT Configuration Submenu

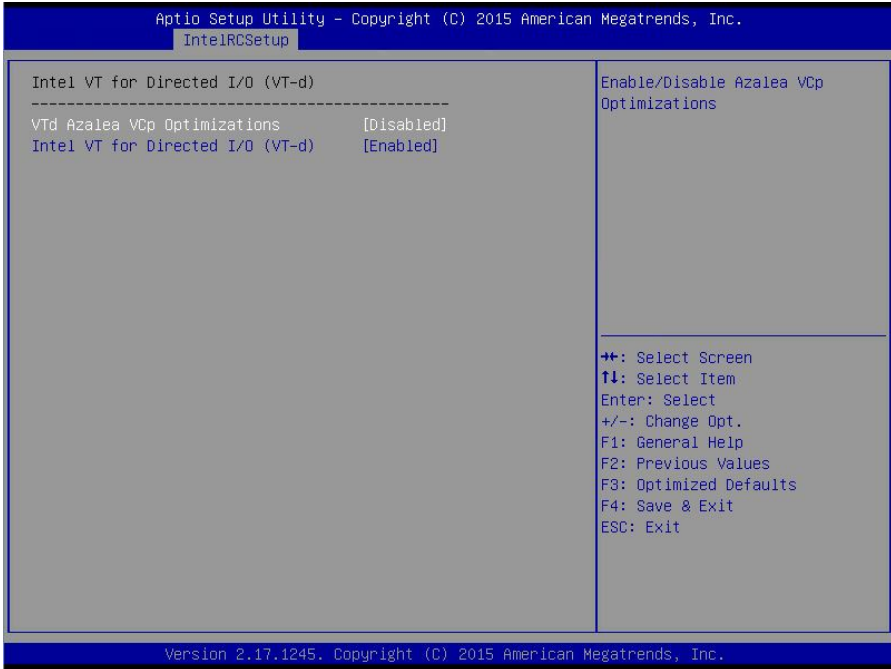


Enable IOAT

Control to enable / disable IOAT devices

Disabled / Enabled

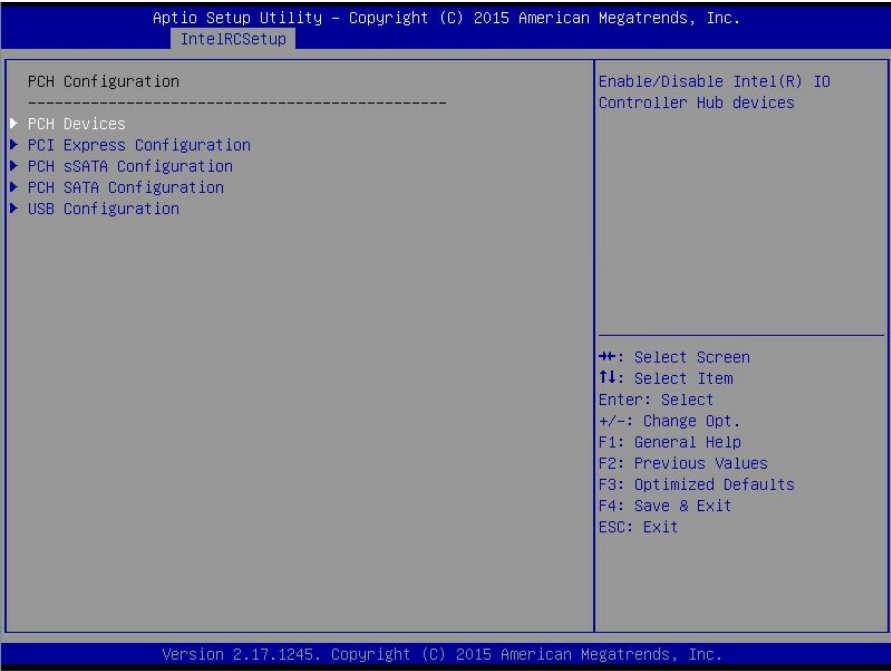
5.4.6.2 Intel® VT for Directed I/O (VT-d)



VTd Azalea VcP Optimizations
Enable/Disable Azalea VcP Optimizations.
Disabled / Enabled

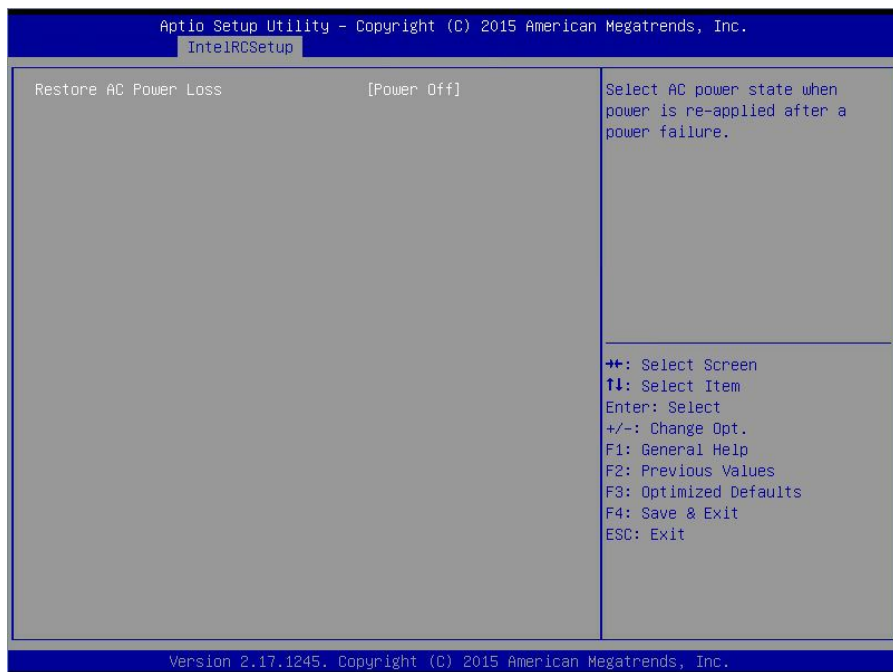
Intel® VT for directed I/O (VT-d)
Enable/Disable Intel® I/O Acceleration Technology for Directed I/O (VT-d) by
reporting the I/O device assignment to VMM through DMAR ACPI Tables.
Disabled / **Enabled**

5.4.7 PCH Configuration



Read Only

5.4.7.1 PCH Devices

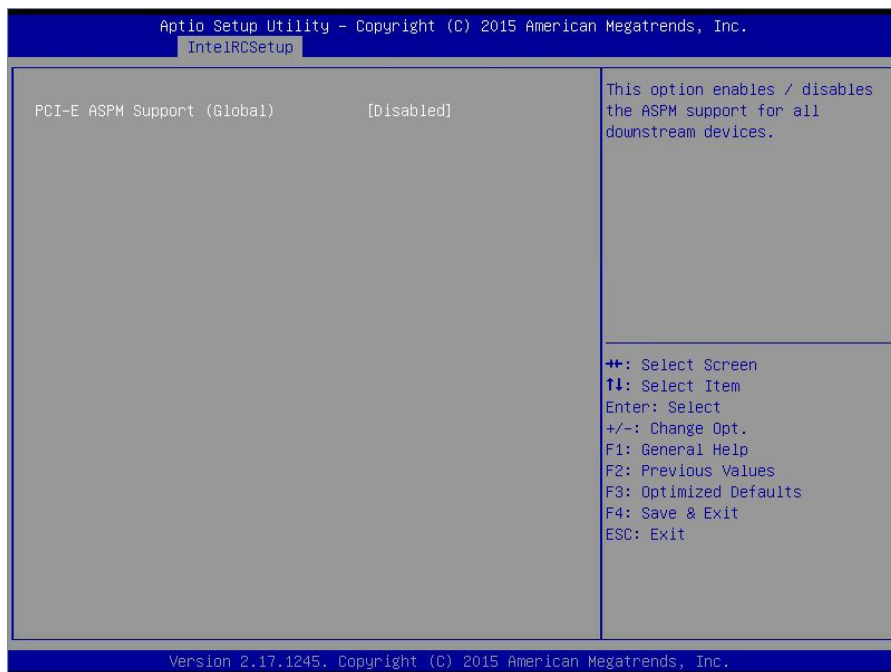


Restore AC Power Loss

Select AC power state when power is re-applied after a power failure.

Power Off / Power On / Last State

5.4.7.2 PCH Express Configuration

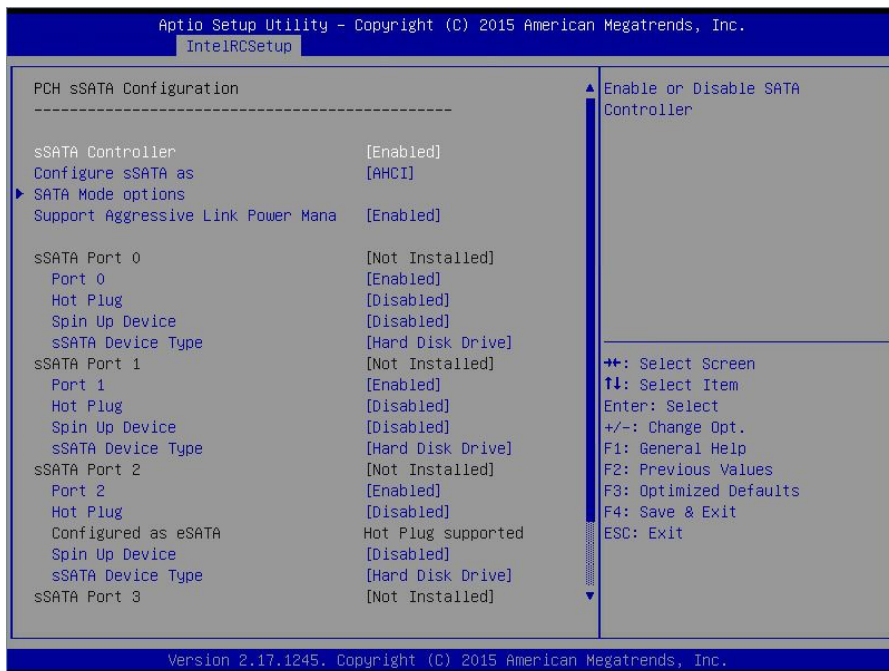


PCI-E ASPM Support (Global)

This option enables/disables the ASPM support for all downstream devices.

Disabled / L1 Only

5.4.7.3 PCH sSATA Configuration



sSATA Controller

Enable or Disable SATA Controller.

Disabled / **Enabled**

Configure sSATA as

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

IDE / **AHCI** / RAID

Support Aggressive Link Power Management

Enables/Disables SALP.

Disabled / **Enabled**

sSATA Port 0/1/2/3

Port 0/1/2/3

Enable or Disable SATA Port.

Disabled / **Enabled**

Hot Plug

Designates this port as Hot Pluggable.

Disabled / Enabled

Spin Up Device

If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

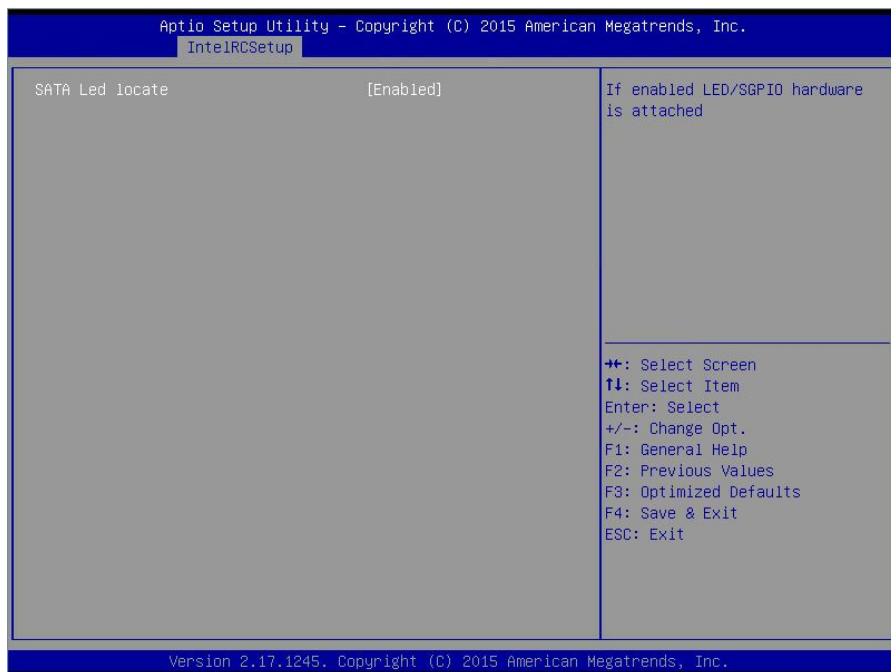
Disabled / Enabled

sSATA Device Type

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

Hard Disk Drive / Solid State Drive

5.4.7.3.1 SATA Mode Options

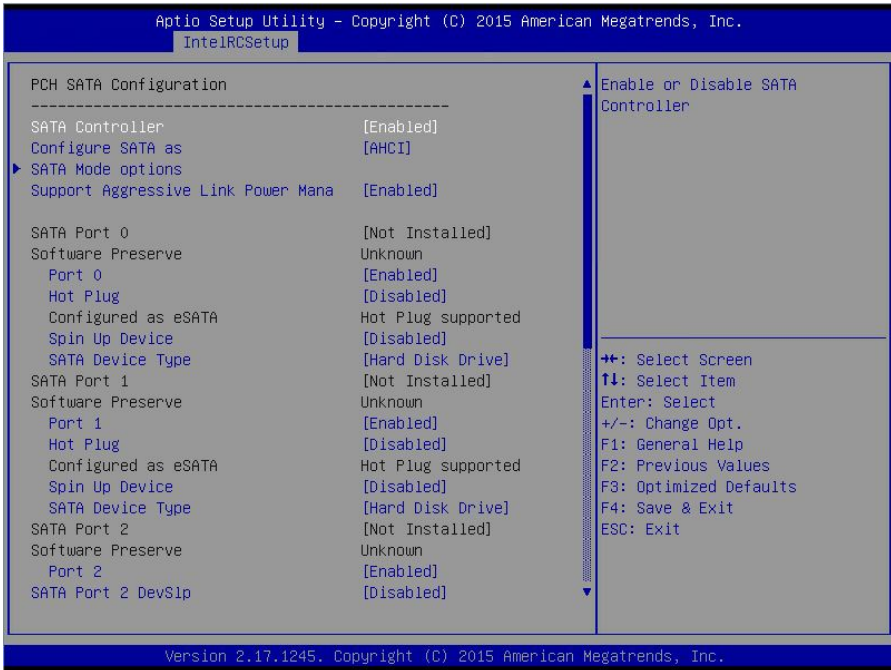


SATA Led locate

If enabled LED/SGPIO hardware is attached.

Disabled / **Enabled**

5.4.7.4 PCH SATA Configuration



sSATA Controller

Enable or Disable SATA Controller.

Disabled / **Enabled**

Configure sSATA as

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

IDE / **AHCI** / RAID

Support Aggressive Link Power Management

Enables/Disables SALP.

Disabled / **Enabled**

sSATA Port 0/1/2/3

Port 0/1/2/3

Enable or Disable SATA Port.

Disabled / **Enabled**

Hot Plug

Designates this port as Hot Pluggable.

Disabled / Enabled

Spin Up Device

If enabled for any of ports Staggered Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

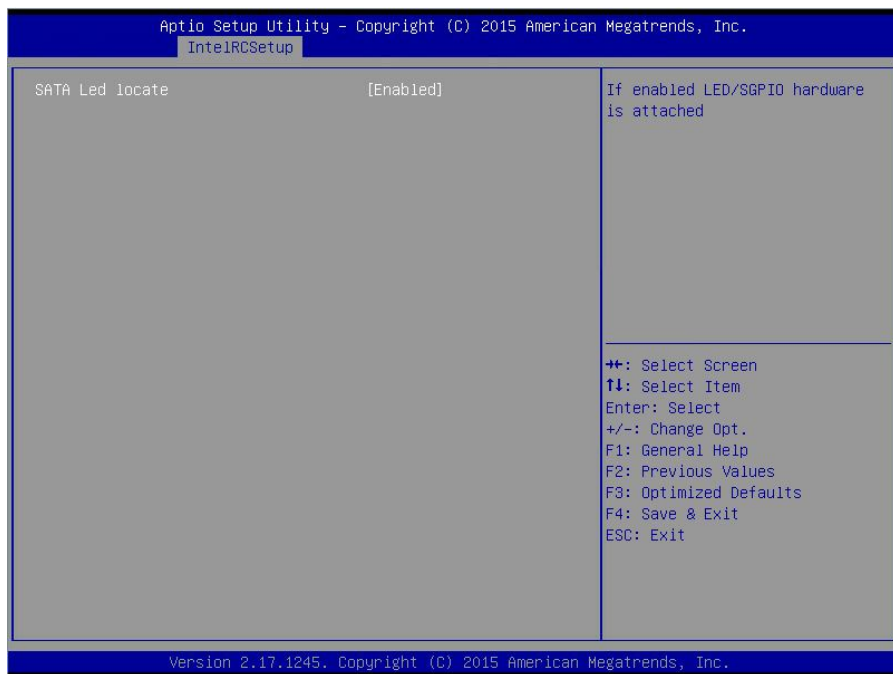
Disabled / Enabled

sSATA Device Type

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

Hard Disk Drive / Solid State Drive

5.4.7.4.1 SATA Mode Options

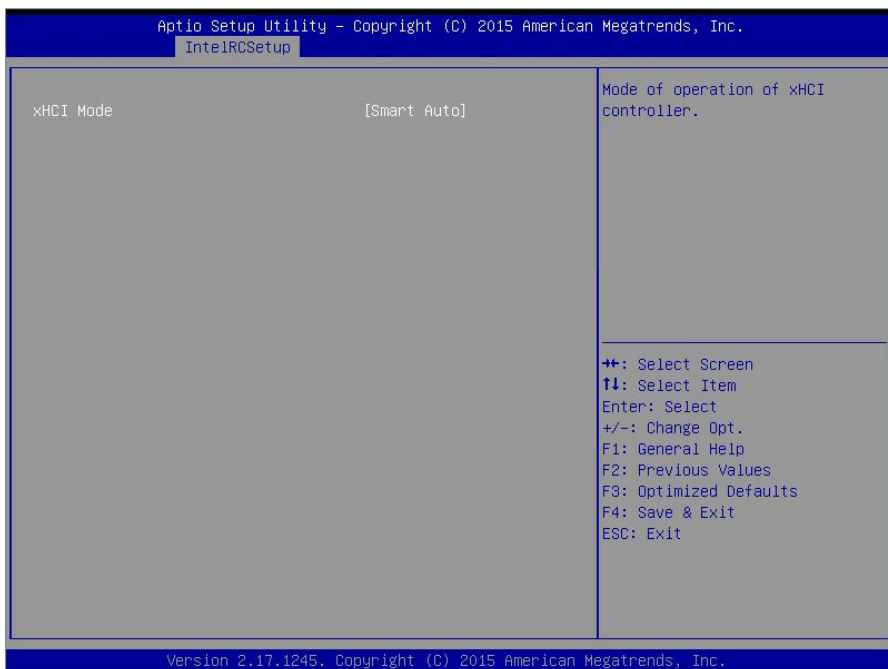


SATA Led locate

If enqabled LED/SGPIO hardware is attached.

Disabled / **Enabled**

5.4.7.5 USB Configuration

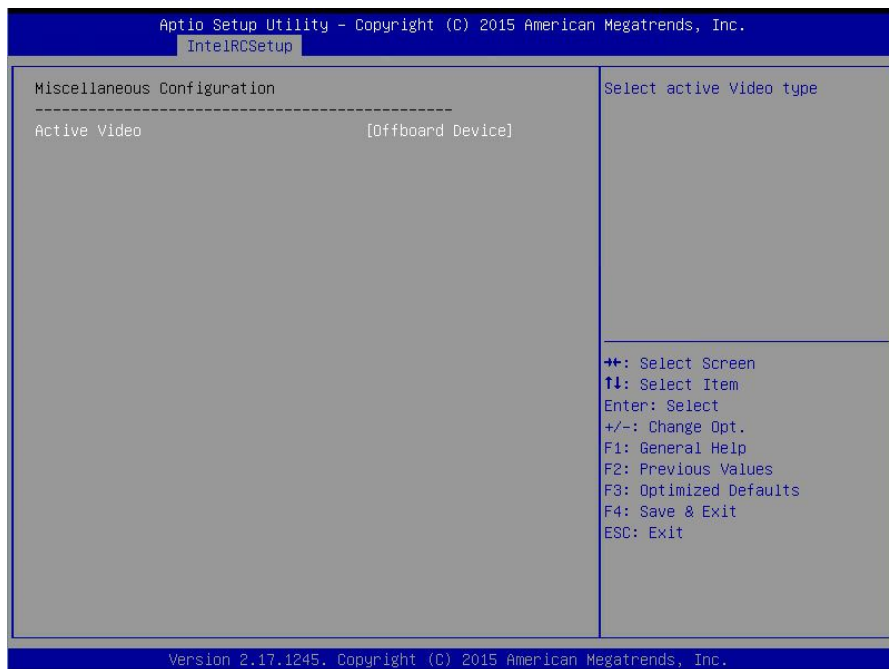


xHCI Mode

Mode of operation of xHCI controller.

Auto / **Smart Auto** / Enabled / Disabled / Manual

5.4.8 Miscellaneous Configuration

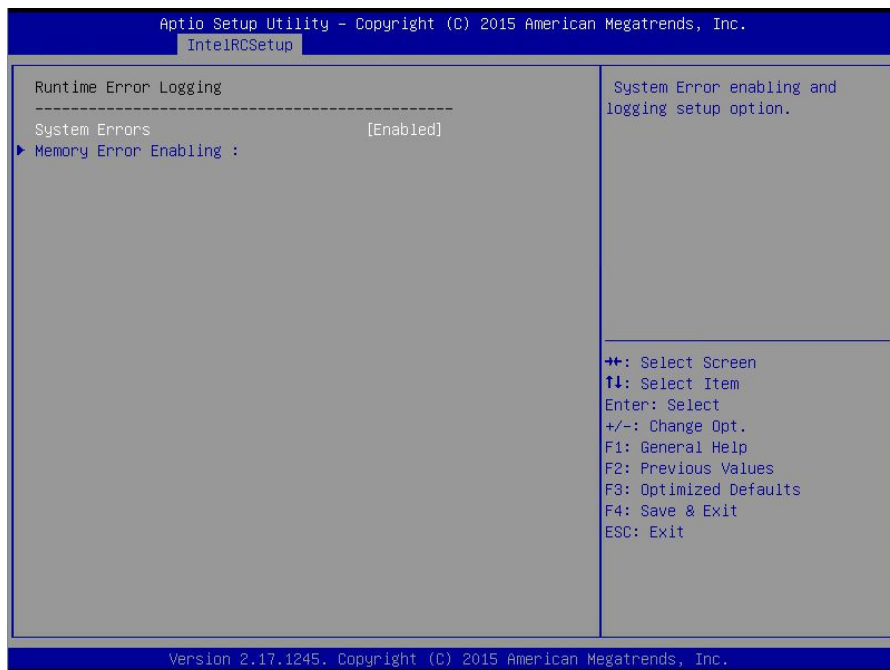


Active Video

Select active video type.

Onboard Device / **Offboard Device**

5.4.9 Runtime Error Logging



System Errors

System Error enabling and logging setup option.

Enabled / Disabled

5.4.9.1 Memory Error Enabling



Memory corrected Error enabling

Enable / Disable memory corrected Errors.

Disabled / **Enabled**

Spare interrupt

Select SMI/CMCI/ErrPin for spare interrupt.

CMCI / **SMI**

5.5 Server Management



Press <Enter> to change the SEL event log configuration.
Enable/Disable interfaces to communicate with BMC.

5.5.1 System Event Log

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.		
Server Mgmt		
Enabling/Disabling Options		
SEL Components	[Disabled]	Change this to enable or disable all features of System Event Logging during boot.
Erasing Settings		
Erase SEL	[No]	
When SEL is Full	[Do Nothing]	
Custom EFI Logging Options		
Log EFI Status Codes	[Error code]	
NOTE: All values changed here do not take effect until computer is restarted.		
		←+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.17.1245. Copyright (C) 2015 American Megatrends, Inc.

SEL Components

Change this to enable or disable all features of System Event Logging during boot.

Disabled / Enabled

NOTE: When **SEL Components** is set to [Disabled], the following items are read only.

Erase SEL

Choose options for erasing SEL.

No / Yes, on next reset / Yes, on every reset

When SEL is Full

Choose options for reactions to a full SEL.

Do Nothing / Erase Immediately

Log EFI Status Codes

Disable the logging of EFI Status Codes or log only error code or only progress code or both.

Both / Disabled / **Error Code** / Progress Code

5.5.2 BMC Network Configuration

Aptio Setup Utility - Copyright (C) 2015 American Megatrends, Inc.	
Server Mgmt	
BMC network configuration	
Lan channel 1	
Configure IP source	[Current setting]
Current Configuration Address source	DynamicAddressBmcDhcp
Station IP address	10.60.110.1
Subnet mask	255.255.192.0
Station MAC address	00-20-ed-5e-03-19
Router IP address	10.60.64.254
Router MAC address	00-00-00-00-00-00
Select to configure LAN channel parameters statically or dynamically (by BIOS or BMC). "Current setting" option will not modify any BMC network parameters during BIOS phase	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.17.1245, Copyright (C) 2015 American Megatrends, Inc.	

Lan channel 1

Configure IP Source

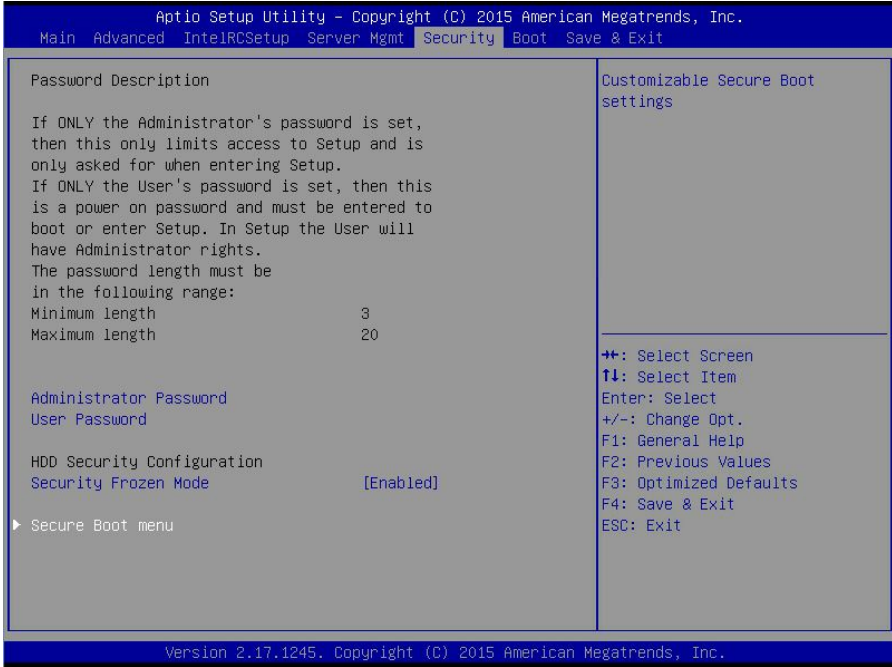
Select the configure LAN channel parameters statically or dynamically (by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

Current setting / Static / DHCP

Current Configuration Address source / Station IP Address / Subnet Mask / Station MAC Address / Router IP Address / Router MAC Address

Read only.

5.6 Security



Administrator Password

Set administrator password in the **Create New Password** window. After you key in the password, the **Confirm New Password** window will pop out to ask for confirmation.

User Password

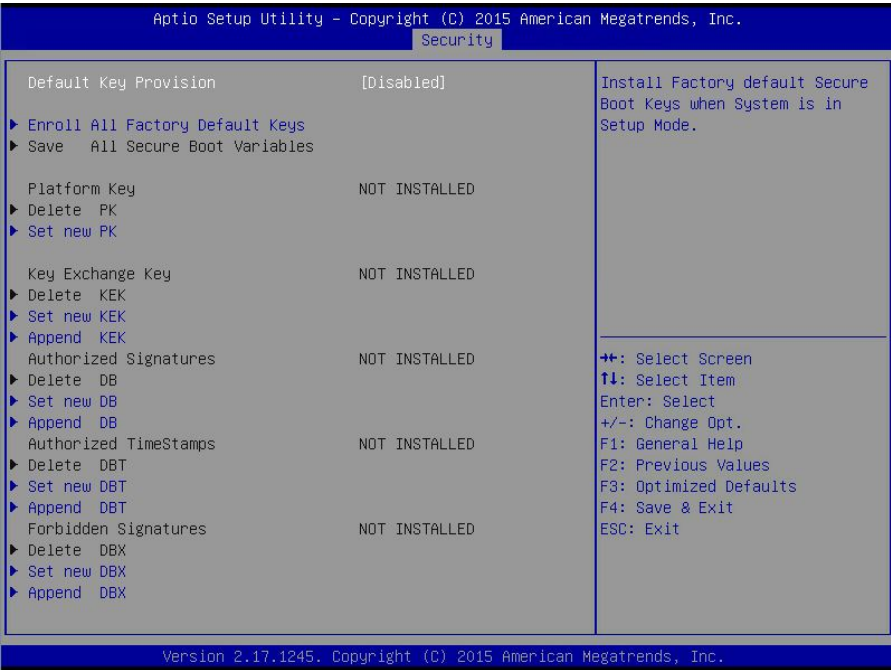
Set user password in the **Create New Password** window. After you key in the password, the **Confirm New Password** window will pop out to ask for confirmation.

Security Frozen Mode

Enable or disable HDD security freeze lock. Disable to support secure erase function.

Enabled / Disabled

5.6.1 Secure Boot Menu



Default Key Provision

Install Factory default Secure Boot Keys when System is in Setup Mode.

Disabled / Enabled

Enroll All Factory Default Keys

Force System to User Mode – install all Factory Default keys (PK, KEK, db, dbx, dbt). Change takes effect after reboot.

Save All Secure Boot Variables

Store content of each Secure Boot Variable (data formatted as EFI_SIGNATURE_LIST) to a file with matching name on selected file system's root folder.

Delete PK

Delete the Variable from NVRAM. Removing PK will reset System to Setup Mode.

Set new PK

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Delete KEK

Delete the Variable from NVRAM. Removing PK will reset System to Setup Mode.

Set new KEK

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Append KEK

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Delete DB

Delete the Variable from NVRAM. Removing PK will reset System to Setup Mode.

Set new DB

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Append DB

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Delete DBT

Delete the Variable from NVRAM. Removing PK will reset System to Setup Mode.

Set New DBT

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Append DBT

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Delete DBX

Delete the Variable from NVRAM. Removing PK will reset System to Setup Mode.

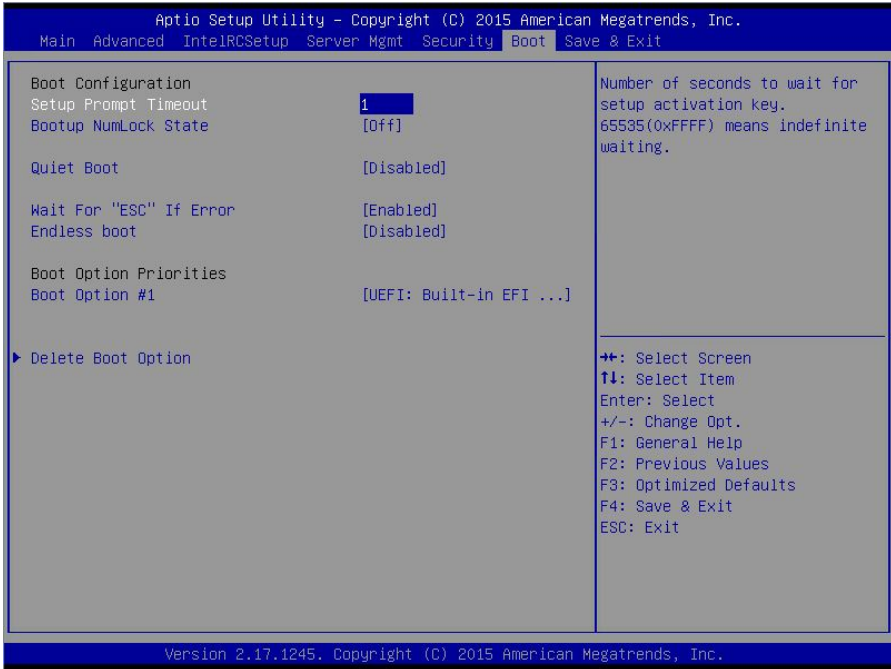
Set new DBX

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

Append DBX

Insert factory default key(s) or load a file formatted as 1. EFI Variable as Time-Based Authenticated Header or 2. Key Certificate list starting with EFI_SIGNATURE_LIST Header or Single Key Certificate in X509_DER, RSA2048_DER or SHA256_BIN format.

5.7 Boot



Boot Configuration

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

1

Bootup NumLock State

Select the keyboard NumLock state.

Off / On

Quiet Boot

Enable or disable Quiet Boot option.

Disabled / Enabled

Wait for "ESC" if Error

Wait for 'ESC' key to be pressed if error occurs.

Enabled / Disabled

Endless Boot

Enable or disable Endless Boot.

Disabled / Enabled

Boot Option Priorities

Boot Option #1

Sets the system boot order.

Device Name / Disabled

5.7.1 Delete Boot Option

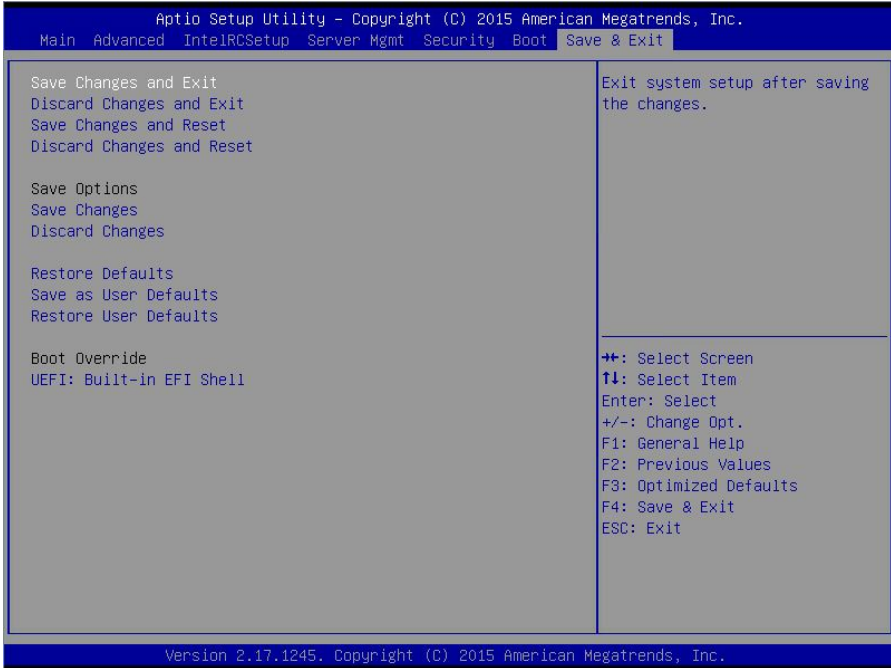


Delete Boot Option

Remove an EFI boot option from the boot order.

Select one to delete / UEFI: Built-in EFI Shell

5.8 Save & Exit



Save Changes and Exit

Exit system setup after saving the changes.

Discard Changes and Exit

Exit system setup without saving any changes.

Save Changes and Reset

Reset the system after saving the changes.

Discard Changes and Reset

Reset system setup without saving any changes.

Save Options

Read only.

Save Changes

Save changes done so far to any of the setup options.

Discard Changes

Discard changes done so far to any of the setup options.

Restore Defaults

Restore/Load Default values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

Boot Override

Read only.

Chapter 6: Diagnostics

NOTE: if you experience problems with setting up your system, always check the following things in the following order:

Memory, Video, CPU

By checking these items, you will most likely find out what the problem might have been when setting up your system. For more information on troubleshooting, check the TYAN website at <http://www.tyan.com>.

6.1 Flash Utility

Every BIOS file is unique for the motherboard it was designed for. For Flash Utilities, BIOS downloads, and information on how to properly use the Flash Utility with your motherboard, please check the TYAN web site at <http://www.tyan.com>

NOTE: Please be aware that by flashing your BIOS, you agree that in the event of a BIOS flash failure, you must contact your dealer for a replacement BIOS. There are no exceptions. TYAN does not have a policy for replacing BIOS chips directly with end users. In no event will TYAN be held responsible for damages done by the end user.

6.2 AMIBIOS Post Code (Aptio)

The POST code checkpoints are the largest set of checkpoints during the BIOS pre-boot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint Ranges

Status Code Range	Description
0x01 – 0x0B	SEC execution
0x0C – 0x0F	Sec errors
0x10 – 0x2F	PEI execution up to and including memory detection
0x30 – 0x4F	PEI execution after memory detection
0x50 – 0x5F	PEI errors
0x60 – 0x8F	DXE execution up to BDS
0x90 – 0xCF	BDS execution
0xD0 – 0xDF	DXE errors
0xE0 – 0xE8	S3 Resume (PEI)
0xE9 – 0xEF	S3 Resume errors (PEI)
0xF0 – 0xF8	Recovery (PEI)
0xF9 – 0xFF	Recovery errors (PEI)

Standard Checkpoints

SEC Phase

Status Code	Description
0x00	Note used
Progress Codes	
0x01	Power on. Reset type detection (soft/hard).
0x02	AP initialization before microcode loading
0x03	North Bridge initialization before microcode loading
0x04	South Bridge initialization before microcode loading
0x05	OEM initialization before microcode loading
0x06	Microcode loading
0x07	AP initialization after microcode loading
0x08	North Bridge initialization after microcode loading
0x09	South Bridge initialization after microcode loading
0x0A	OEM initialization after microcode loading
0x0B	Cache initialization

SEC Error Codes	
0x0C – 0x0D	Reserved for future AMI SEC error codes
0x0E	Microcode not found
0x0F	Microcode not found

SEC Beep Codes

None

PEI Phase

Status Code	Description
Progress Codes	
0x10	PCI Core is started
0x11	Pre-memory CPU initialization is started
0x12	Pre-memory CPU initialization (CPU module specific)
0x13	Pre-memory CPU initialization (CPU module specific)
0x14	Pre-memory CPU initialization (CPU module specific)
0x15	Pre-memory North Bridge initialization is started
0x16	Pre-Memory North Bridge initialization (North Bridge module specific)
0x17	Pre-memory North Bridge initialization (North Bridge module specific)
0x18	Pre-Memory North Bridge initialization (North Bridge module specific)
0x19	Pre-memory South Bridge initialization is started
0x1A	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1B	Pre-memory South Bridge initialization (South Bridge module specific)
0x1C	Pre-Memory South Bridge initialization (South Bridge module specific)
0x1D – 0x2A	OEM pre-memory initialization codes
0x2B	Memory initialization. Serial Presence Detect (SPD) data reading
0x2C	Memory initialization. Memory presence detection
0x2D	Memory initialization. Programming memory timing information
0x2E	Memory initialization. Configuring memory
0x2F	Memory initialization (other)
0x30	Reserved for ASL (see ASL Status Codes section below)
0x31	Memory Installed
0x32	CPU post-memory initialization is started.
0x33	CPU post-memory initialization. Cache initialization
0x34	CPU post-memory initialization. Application Processor(s) (AP) initialization
0x35	CPU post-memory initialization. Boot Strap Processor (BSP) selection
0x36	CPU post-memory initialization. System Management Mode(SMM) initialization
0x37	Post-Memory North Bridge initialization is started.

Status Code	Description
0x38	Post-Memory North Bridge initialization (North Bridge module specific)
0x39	Post-Memory North Bridge initialization (North Bridge module specific)
0x3A	Post-Memory North Bridge initialization (North Bridge module specific)
0x3B	Post-Memory South Bridge initialization is started
0x3C	Post-Memory South Bridge initialization (South Bridge module specific)
0x3D	Post-Memory South Bridge initialization (South Bridge module specific)
0x3E	Post-Memory South Bridge initialization (South Bridge module specific)
0x3F – 0x4E	OEM post memory initialization codes
0x4F	DXE PIL is started
PCI Error Codes	
0x50	Memory initialization error. Invalid memory type or incompatible memory speed
0x51	Memory initialization error. SPD reading has failed.
0x52	Memory initialization error. Invalid memory size or memory modules do not match.
0x53	Memory initialization error. No usable memory detected
0x54	Unspecified memory initialization error
0x55	Memory not installed
0x56	Invalid CPU type or speed
0x57	CPU mismatch
0x58	CPU self test failed or possible CPU cache error
0x59	CPU microcode is not found or microcode update is failed.
0x5A	Internal CPU error
0x5B	Reset PPI is not available.
0x5C – 0x5F	Reserved for future AMI error codes
S3 Resume Progress Codes	
0xE0	S3 Resume is started (S3 Resume PPI is called by the DXE IPL).
0xE1	S3 Boot Script execution
0xE2	Video repost
0xE3	OS S3 wake vector call
0xE4 – 0xE7	Reserved for future AMI progress codes
S3 Resume Error Codes	
0xE8	S3 Resume failed
0xE9	S3 Resume PPI not found
0xEA	S3 Resume Boot Script error
0xEB	S3 OS wake error
0xEC – 0xEF	Reserved for future AMI error codes

Recovery Progress Codes	
0xF0	Recovery condition triggered by firmware (Auto recovery)
0xF1	Recovery condition triggered by user (forced recovery)
0xF2	Recovery process started
0xF3	Recovery firmware image is found.
0xF4	Recovery firmware image is loaded.
0xF5 – 0xF7	Reserved for future AMI progress codes
Recovery Error Codes	
0xF8	Recovery PPI is not available.
0xF9	Recovery capsule is not found.
0xFA	Invalid recovery capsule
0xFB – 0xFF	Reserved for future AMI error codes

PEI Beep Codes

# of Beeps	Description
1 (repeatedly)	Memory not installed
1	Memory was installed twice (installPEIMemory routine in PEI Core called twice).
2	Recovery started
3	DXE IPL was not found.
3	DXE Core Firmware Volume was not found.
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available.

DXE Phase

Status Code	Description
0x60	DXE Core is started.
0x61	NVRAM initialization
0x62	Installation of the South Bridge Runtime Services
0x63	CPU DXE initialization is started.
0x64	CPU DXE initialization (CPU module specific)
0x65	CPU DXE initialization (CPU module specific)
0x66	CPU DXE initialization (CPU module specific)
0x67	CPU DXE initialization (CPU module specific)
0x68	PCI host bridge initialization
0x69	North Bridge DXE initialization is started.
0x6A	North Bridge DXE SMM initialization is started.
0x6B	North Bridge DXE initialization (North Bridge module specific)

Status Code	Description
0x6C	North Bridge DXE initialization (North Bridge module specific)
0x6D	North Bridge DXE initialization (North Bridge module specific)
0x6E	North Bridge DXE initialization (North Bridge module specific)
0x6F	North Bridge DXE initialization (North Bridge module specific)
0x70	South Bridge DXE initialization is started.
0x71	South Bridge DXE SMM initialization is started.
0x72	South Bridge devices initialization
0x73	South Bridge DXE initialization (South Bridge module specific)
0x74	South Bridge DXE initialization (South Bridge module specific)
0x75	South Bridge DXE initialization (South Bridge module specific)
0x76	South Bridge DXE initialization (South Bridge module specific)
0x77	South Bridge DXE initialization (South Bridge module specific)
0x78	ACPI module initialization
0x79	CSM initialization
0x7A – 0x7F	Reserved for future AMI DXE codes
0x80 – 0x8F	OEM DXE initialization codes
0x90	Boot Device Selection (BDS) phase is started
0x91	Driver connecting is started
0x92	PCI Bus initialization is started
0x93	PCI Bus Hot Plug Controller initialization
0x94	PCI Bus Enumeration
0x95	PCI BUS Request Resources
0x96	PCI Bus Assign Resources
0x97	Console output devices connect
0x98	Console Input devices connect
0x99	Super IO initialization
0x9A	USB initialization is started.
0x9B	USB Reset
0x9C	USB Detect
0x9D	USB Enable
0x9E -0x9F	Reserved for future AMI codes
0xA0	IDE initialization is started
0xA1	IDE Reset
0xA2	IDE Detect
0xA3	IDE Enable
0xA4	SCSI initialization is started.

Status Code	Description
0xA5	SCSI Reset
0xA6	SCSI Detect
0xA7	SCSI Enable
0xA8	Setup Verifying Password
0xA9	Start of Setup
0xAA	Reserved for ASL (see ASL Status Codes section below)
0xAB	Setup Input Wait
0xAC	Reserved for ASL (see ASL Status Codes section below)
0xAD	Ready To Boot event
0xAE	Legacy Boot event
0xAF	Exit Boot Services event
0xB0	Runtime Set Virtual Address MAP Begin
0xB1	Runtime Set Virtual Address MAP End
0xB2	Legacy Option ROM initialization
0xB3	System Reset
0xB4	USB hot plug
0xB5	PCI bus hot plug
0xB6	Clean-up of NVRAM
0xB7	Configuration Reset (reset of NVRAM settings)
0xB8 – 0xBF	Reserved for future AMI codes
0xC0 – 0xCF	OEM BDS initialization codes
DXE Error Codes	
0xD0	CPU initialization error
0xD1	North Bridge initialization error
0xD2	South Bridge initialization error
0xD3	Some of the Architectural Protocols are not available
0xD4	PCI resource allocation error. Out of Resources
0xD5	No Space for Legacy Option ROM
0xD6	No Console Output Devices are found.
0xD7	No Console Input Devices are found.
0xD8	Invalid password
0xD9	Error loading Boot Option (LoadImage returned error)
0xDA	Boot Option is failed (StartImage returned error).
0xDB	Flash update is failed.
0xDC	Reset protocol is not available.

DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available.
5	No Console Output Devices are found.
5	No Console Input Devices are found.
6	Flash update is failed.
7	Reset protocol is not available.
8	Platform PCI resource requirements cannot be met.

ACPI/ASL Checkpoints

Status Code	Description
0x01	System is entering S1 sleep state.
0x02	System is entering S2 sleep state.
0x03	System is entering S3 sleep state.
0x04	System is entering S4 sleep state.
0x05	System is entering S5 sleep state.
0x10	System is waking up from the S1 sleep state.
0x20	System is waking up from the S2 sleep state.
0x30	System is waking up from the S3 sleep state.
0x40	System is waking up from the S4 sleep state.
0xAC	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

Appendix I: Cable Connection Tables

1. System Fan Connector

System Fan to S7074 MB		
System Fan	Connect to	S7074
Fan1	→	SYS_FAN_1
Fan2	→	SYS_FAN_2
Fan3	→	SYS_FAN_3
Fan4	→	SYS_FAN_4
Fan5	→	SYS_FAN_5
Fan6	→	SYS_FAN_6

2. COM PORT CABLE

COM PORT CABLE to S7074 MB		
COM PORT CABLE	Connect to	S7074
	→	J13

3. Mini-SAS Cable & SATA Cable & PCI-E CABLE

S7074 MB to HDD FOR B7074G83V8			
	S7074GM2NR-B	Connect to	HDD
Mini-SAS CABLE	J23	→	HDD 0~3
Mini-SAS CABLE	J25	→	HDD 4~7

S7074 MB to HDD FOR B7074G83W18			
	S7074GM2NR-B	Connect to	HDD
Mini-SAS CABLE	J23	→	SATA #0 ~ #3
Mini-SAS CABLE	J25	→	SATA #4 ~ #7
SATA CABLE	SATA0	→	SATA #16
SATA CABLE	SATA1	→	SATA #17

M7094-2308-8I CARD to HDD		
M7094-2308-8I	Connect to	HDD
SAS0~SAS3	→	SATA #8 ~ #11
SAS4~SAS7	→	SATA #12 ~ #15

S7074 MB to HDD FOR B7074G83E8V2			
	S7074GM2NRE-B	Connect to	HDD
PCI-E CABLE	J4	→	SSD #0
PCI-E CABLE	J3	→	SSD #1
PCI-E CABLE	J5	→	SSD #2
PCI-E CABLE	J6	→	SSD #3
PCI-E CABLE	J7	→	SSD #4
PCI-E CABLE	J8	→	SSD #5
PCI-E CABLE	J11	→	SSD #6
PCI-E CABLE	J12	→	SSD #7
SATA CABLE	SATA0	→	SATA #0
SATA CABLE	SATA1	→	SATA #1

4. Power Supply Cables

PSU to S7074 MB		
PSU	Connect to	S7074
2x12P P1	→	PW1
2x4P P2	→	PW3
2x4P P3	→	PW2
PSMI P6	→	PSMI1

5. AD/DC Power CABLE

PSU to HDD FOR B7074G83V8			
	PSU	Connect to	HDD
AD/DC PWR CABLE	P4	→	HDD 0~3 HDD 4~7

PSU to HDD FOR FOR B7074G83W18			
	PSU	Connect to	HDD
AD/DC PWR CABLE	P5	→	SATA #0 ~ #7, #16
AD/DC PWR CABLE	P4	→	SATA #8 ~ #15, #17

PSU to HDD FOR B7074G83E8V2			
	PSU	Connect to	HDD
AD/DC PWR CABLE	P5	→	SATA #0, SSD #0 ~ #3
AD/DC PWR CABLE	P4	→	SATA #1, SSD #4 ~ #7
	PSU	Connect to	S7074
AD/DC PWR CABLE	P5	→	J14
AD/DC PWR CABLE	P4	→	J17

NOTE

Appendix II: FRU Parts Table

GF83-B7074 FRU Parts				
Item	Model Number	Part Number	Picture	Description
PSU	FRU-PS-0110	471100000199		CHICONY,650 W,S12-650P1BB S650E007L,(01) [SKU: B7074G83V8&B7074G83W18]
	FRU-PS-0120	471100000221		CHICONY, 800 W,S13-800P1AB S800E007L,(01) [SKU: B7074G83E8V2]
FAN	FRU-TS-0120	336210000047		40*40*28mm
Heatsink & Cooler	FRU-TH-0140	343T51200003		PASSIVE-HEATSINK, 0P305224, 108.0X82.0X25.0 mm,
PCBA	M2091	411739100498		M2091/RISER BD,R01
Cable	FRU-CS-0350	422T51200016		MINI-SAS CABLE, 850 mm, [SKU: B7074G83V8]
	FRU-CS-0360	422T51200013		MINI-SAS CABLE, 1050 mm, [SKU: B7074G83V8&B7074G83W18]
	FRU-CS-0370	422T51200011		AC/DC POWER CABLE; 550mm/750mm [SKU: B7074G83V8]
	FRU-CS-0380	422T51200017		MINI-SAS CABLE,850 mm [SKU: B7074G83W18]
	FRU-CS-0390	422T51200010		AC/DC POWER CABLE,550mm [SKU: B7074G83W18]
	FRU-CS-0400	422T51200012		AC/DC POWER CABLE,750mm [SKU: B7074G83W18]
	FRU-CS-0410	422T51200014		PCIe TO MINI-SAS HD CABLE,550 mm, [SKU: B7074G83E8V2]

	FRU-CS-0420	422T51200015		PCIE TO MINI-SAS HD CABLE, 760 mm, [SKU: B7074G83E8V2]
	FRU-CS-0430	422T51200008		AC/DC POWER CABLE,400mm[SKU: B7074G83E8V2]
	FRU-CS-0440	422T51200009		AC/DC POWER CABLE,600mm[SKU: B7074G83E8V2]
	FRU-CS-0330	332810000514		PWR Cord; US, 125V, 16 AWG(1.31mm²),L:1800MM
	CCBL-0300	332810000281		PWR Cord; EU, 250V, H05VV-FX3C, 10A, 0.75MM
Rail ASSY	FRU-AS-0050	452T52800001		Slide Rail Kit

Appendix III: Technical Support

If a problem arises with your system, you should first turn to your dealer for direct support. Your system has most likely been configured or designed by them and they should have the best idea of what hardware and software your system contains. Hence, they should be of the most assistance for you. Furthermore, if you purchased your system from a dealer near you, take the system to them directly to have it serviced instead of attempting to do so yourself (which can have expensive consequence).

If these options are not available for you then MiTAC International Corporation can help. Besides designing innovative and quality products for over a decade, MiTAC has continuously offered customers service beyond their expectations. TYAN's website (<http://www.tyan.com>) provides easy-to-access resources such as in-depth Linux Online Support sections with downloadable Linux drivers and comprehensive compatibility reports for chassis, memory and much more. With all these convenient resources just a few keystrokes away, users can easily find their latest software and operating system components to keep their systems running as powerful and productive as possible. MiTAC also ranks high for its commitment to fast and friendly customer support through email. By offering plenty of options for users, MiTAC serves multiple market segments with the industry's most competitive services to support them.

Please feel free to contact us directly for this service at tech-support@tyan.com

Help Resources:

1. See the beep codes section of this manual.
2. See the TYAN's website for FAQ's, bulletins, driver updates, and other information: <http://www.tyan.com>
3. Contact your dealer for help before calling TYAN.

Returning Merchandise for Service

During the warranty period, contact your distributor or system vendor FIRST for any product problems. This warranty only covers normal customer use and does not cover damages incurred during shipping or failure due to the alteration, misuse, abuse, or improper maintenance of products.



NOTE:

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service can be rendered. You may obtain service by calling the manufacturer for a Return Merchandise Authorization (RMA) number. The RMA number should be prominently displayed on the outside of the shipping carton and the package should be mailed prepaid.

TYAN will pay to have the board shipped back to you.

TYAN® GF83-B7074 Service Engineer's Manual V1.0

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